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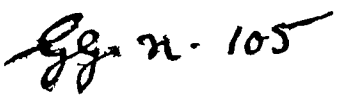

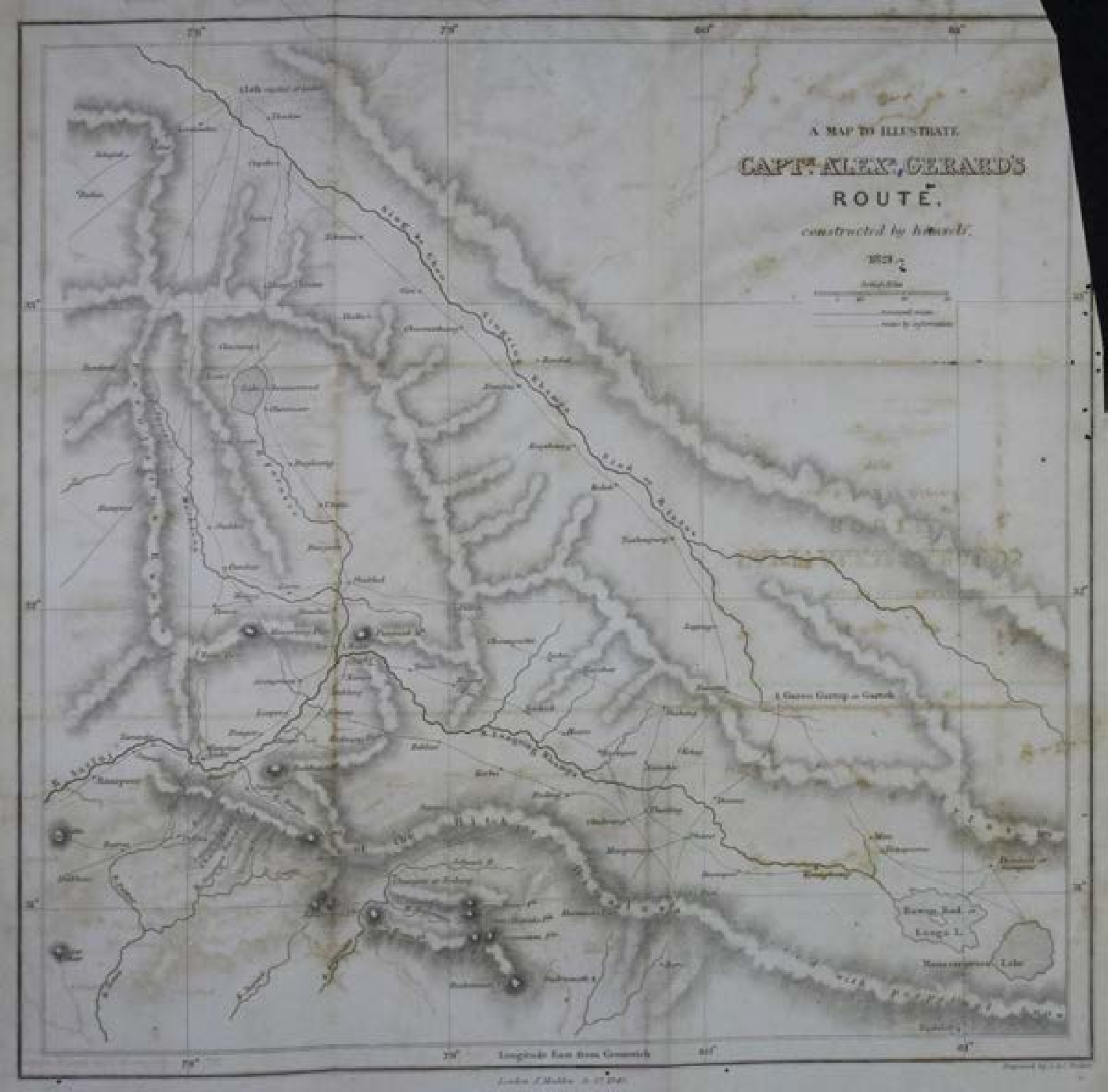
A MAP TO ILLUSTRATE
CAPTN ALEXR GERARD'S
ROUTE
constructed by himself
1828
Longitude East from Greenwich

NARRATIVE

OF A

JOURNEY FROM CAUNPOOR

TO THE

BOORENDO PASS IN THE HIMALAYA MOUNTAINS,

Viâ GWALIOR, AGRA, DELHI, AND SIRHIND:

BY

MAJOR SIR WILLIAM LLOYD.

AND

CAPTAIN ALEXANDER GERARD'S

ACCOUNT OF AN ATTEMPT TO PENETRATE BY BEKHUR TO GAROO, AND THE LAKE MANASAROWARA:

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WITH A

LETTER

FROM THE LATE

J. G. GERARD, Esq.

DETAILING A

Visit to the Shatool and Boorendo Passes,

FOR THE PURPOSE OF DETERMINING THE LINE OF PERPETUAL SNOW ON THE SOUTHERN FACE OF THE HIMALAYA, &c., &c., &c.

With Maps.

EDITED BY GEORGE LLOYD.

VOL. II.

J. MADDEN & Co.,

(Late Parbury & Co.)

8, LEADENHALL STREET.

1840.

LONDON.
E. VARTY, 27, CAMOMILE STREET, BISHOPSGATE.

BOOK II.

CAPT. ALEXANDER GERARD'S NARRATIVE.

INTRODUCTION.

The Editor takes the liberty of extracting the passages below from some recent letters from Captain Alex. Gerard to him, in order to explain several portions of the following Narrative.

"You will see that the letters were written on the spot, in a very hurried manner; sometimes after a fatiguing journey of eight or ten hours on my feet, for I had no other conveyance, except once, when I got a pony for nine or ten miles.

"The whole, with the exception of the notes which I have marked J. G. G., was written by myself, but my brother wished his name to be put down, as he accompanied me part of the way, as

far as Sungla, but he was obliged to leave me on the afternoon of the 23rd of June (1821); so as far as Sungla, 28th June, are letters I wrote to an intimate friend. All the rest were addressed to my brother James at Soobahtoo.

" From the 23rd June, until I reached Kotgurh, I was entirely alone,

" I should now say something regarding the heights of the principal places, which you will find somewhat different from those published in the *Calcutta Journal*, but not very much. As my letters were originally written on the spot, I of course had no correspondent observations of the barometer, and I took them as I had found them in former years at Soobahtoo. After my return, I recalculated them from corresponding observations taken by my brothers, Patrick and James, so those I sent are by far the most correct. There is also a difference between my heights and those by Captain Herbert, in vol. 14 of the Asiatic Researches, sometimes I believe 300 or 400 feet. This is easily accounted for. In the first place, Herbert had no barometer, whilst I had two of

the very best, by Dollond. Herbert's heights were calculated from the boiling-point of water, a degree of the thermometer being equal to 500 feet, whereas it requires half an inch of the barometer to make that difference. Again, the degrees of the thermometer are so small, that they cannot be minutely subdivided.

" When Herbert was at Soobahtoo, he made several comparisons between his thermometer and my barometers, and a difference of a degree, and sometimes a degree and a half, in two different trials, even in the space of a few minutes, was no uncommon occurrence. This arose from the difficulty of making the water always boil the same, the least alteration in the state of the fire would make this difference; but you may take down the barometer and put it up again, and there never will be a difference of the two hundredth part of an inch, equivalent to five feet, even if the mercury in the cistern is lowered and readjusted. Besides, Herbert had no correspondent observations, whereas I always had at Soobahtoo or Kotgurh,

or both places. Even Herbert allowed that my heights were more accurate than his, as he was aware that his thermometer could never be compared to my mountain barometers. The differences in the heights in general are very little, and Herbert deserves great credit for getting them so correct with such an instrument.

"With regard to the latitudes, where our places of encampment were the same, I do not believe the difference ever exceeds more than a few seconds, which is of no consequence, since I have only put them down to single minutes, which is correct enough for most maps. I could give them to seconds were it necessary. The longitudes are different. Mine were reckoned chiefly from Soobahtoo, where I got at least twenty immersions and emersions of Jupiter's first Satellite, nine occultations, two solar eclipses, and fifty or sixty lunar transits. I also observed satellites on the route, as you will see by the narrative. Herbert's and my longitudes do not, however, differ more than a couple of miles at most, if so much. It is now

many years since I examined them, so I speak from recollection. When Herbert and I observed at Kotgurh with different telescopes, and different chronometers, each taking his own time, there was never once a single second difference in the eclipses of Jupiter's satellites."

BOOK II.

CHAPTER I.

SNOWY PASSES.

Departure from Rol: ascent of Shatool 15,555 *feet above the level of the sea: Musquitoes: halt at the Pass: return part of the former route: ascend Sheear Pass: grand Scenery: descend to Jangleeg, crossing the Seepon river: fruitless attempts to induce the people to accompany us to Soondroo Pass.*

We left Soobahtoo in the beginning of June 1821, and the first part of the way was travelled expeditiously, that we might have more leisure.

We were well supplied with instruments. We had two perambulators, three theodolites, one of which was by Troughton, divided to 20″, a 50-feet chain, a 5-feet standard scale, by Dollond, two

excellent 10-inch sextants, graduated to 10″, a Troughton's reflecting circle, and two mountain barometers, by Dollond; these last were of the most improved construction: they had glass cisterns, scales of eighteen inches, which could measure heights of 23,000 feet, and all the necessary adjustments; we had spare tubes, filled and boiled by Dollond, to fit into the frames, thermometers, and several other instruments, besides a capital transit and chronometer. From Soobahtoo to Rol is 101 m. 4 f.

June 6.—Rol is a small division containing five villages, in Chooara, one of the large districts of Busehur; the villages are from 9000 to 9400 feet above the level of the sea, which last is the highest inhabited land in this quarter on the south-western face of the Himalaya; the crops are wheat, barley,* ooa,† p'hapur, and peas;‡ the upper limit of cultivation is 10,000 feet, and the grains frequently do not ripen.

* Barley. Hordeum hexastychon.
† Ooa. Hordeum cæleste.
‡ P'hapur. Fagopyrum esculentum.

Having reduced our baggage, and completed our preparations, we left Rol at 3 P. M., intending to halt at the highest trees; the footpath at first was a gentle ascent upon turf, it then rose rapidly through a beautiful wood of oak, yew, pine, rhododendron, and horse-chestnut, with some beds of juniper; we overtopped the forest by half-past 4, and a mile of good road upon grass brought us to Boochkal Pass, which is the highest limit of forest. The barometer showed 19.465; the temperature of the mercury 63°, and that of the air 51°, answering to an elevation of 11,800 feet; the rest of the way to our camp at a halting-place named Reoonee, on the bank of a rivulet, 4½ miles from Rol, was extremely difficult and tedious, leading amongst piles of loose stones, that seemed to have lately descended from the cliffs above. Our camp was at the height of 11,750 feet, and around were stunted birches, dwarf oaks, pines, and juniper, and two plants resembling rhododendron, one is called talsar* by the natives, and the leaves, when rubbed, emit a strong aromatic smell;

* Talsar. Rhododendron aromaticum?

plenty of thyme and cowslips flourished in a moist, black, rich turf, not unlike peat, which might probably burn well when dry.

June 7.—Water froze, and at sunrise the thermometer was 35°. The road to Shatool makes a bend to the eastward, and as we had travelled it before, we struck across the ridge to see if we could discover any thing new. We ascended the verdant slope of a grassy glen, decorated with odoriferous flowers, the summer abode of shepherds and their flocks; we passed many rills trickling amongst turf, and at half-past eight halted in the chilly recess of a huge granitic rock, near a rivulet, arrested in its precipitous course by frost; after observing the thermometer, which was 45°, we proceeded alternately through snow-beds and swamps. The snow became more frequent till we attained the crest of the ridge, where it is continuous at this season, although next month it will be dissolved; here the barometer was 18.320, and the temperature of the air 42°, equal to an elevation of 13,450 feet; from this spot we descended upon angular fragments of gneiss, granite, and

quartz, jumbled together in wild disorder; every step was dangerous and fatiguing, and we were somewhat tired when we reached our halting-place at Kunneejan, a distance of only 5 miles. Our guides started objections to our proceeding further to-day, so we indulged them in their own wishes. The height of this place is 13,400 feet, and the ground is but seldom seen at this season, there being much snow around, and in the bed of the Undretee River, one of the branches of the Pubur, which rises near Shatool. There was no want of many various beautiful flowers where the snow had melted, but there were no bushes, and the fire-wood was brought from the last camp.

From this spot the piles of stones at the Pass, now half buried in snow, were clearly visible, and the great eastern peak, named Dunerko, had a formidable appearance; the ascent seemed no less appalling, for the crest was nearly 2200 feet above us, and the angle seldom under 25°; here and there a solitary rock projected its black head, but all else was a dreary waste of unfathomable snow, aching to the sight. To the E. and S. E. was

seen a low part of the Himalayan Chain. Its altitude is considerably less than Shatool, but it is rendered impassable by a perpendicular wall of gneiss, that forms an impracticable barrier for several miles. During the day the thermometer did not rise above 43°, and at sun-set it was 34°.

June 8.—At day-break we heard, as we had often done before, at these elevations, the sound of the wings of large flocks of pheasants, passing to the southward over our heads; these birds live at the edge of the snow in general, and come lower down as it descends; in winter they are rarely seen under 6000 feet; there are many species, amongst which are the Golden and Argos Pheasant.

At sun-rise the thermometer was 29°, and the ground frozen hard; at this time, and for an hour afterwards, we observed the shadow of the eastern peak of the Pass, projected upon the sky in a beautiful black streak.

By the advice of the guides we did not move till half-past nine, as they said we should otherwise find it difficult, from slipping, to ascend the

snow-bed before the sun's rays had melted the upper surface.

We reached the crest a little past eleven, distant two miles and a half, and the ascent, although laborious, was easier than we expected, for the snow generally sunk two inches, and afforded good footing, so we had to cut steps in but few places. The barometer, during our halt here, ranged from 17.040 to 17.120, and the thermometer from 24° to 41°, which, compared with correspondent observations at Soobahtoo, gives 15,556 feet for the height of this pass; the barometers used were those by Dollond, and it is worthy of remark, that the height now deduced is only two feet more than what my brother James made it last year by barometers of our own construction.

We were astonished to find the snow completely covered with an insect resembling a musquito. They were in a state of torpidity, and we thought them dead; but breathing upon them caused them to jump about, and the sunshine revived them.

The rocks here are chiefly mica-slate and gneiss,

with some granite; the direction of the strata is almost perpendicular to that of the range, which forms a series of inclined planes sloping to the E. and E. S. E., at an angle of from ten to twenty degrees with the horizon. In some places the stones are pure mica, yielding easily to the hatchet, so by clearing away the snow, and cutting the mica, we got a place for our small tent.

This was the first camp that was ever pitched here, and we were the first people who visited Shatool this year, indeed nobody had crossed the pass since September last, when my brother James effected the passage with great difficulty, and lost two of his servants, who were frozen to death at mid-day; we found the body of one in October, about a month afterwards, and that of the other was discovered eight or ten months later.

Strange to say, our servants, inhabitants of the hot plains of India, were the only people who would remain with us; our hill-porters, and even the guides, who were constantly in the habit of crossing these mountains, went down to pass the night in a sheltered ravine, two miles beyond our former

camp. We had plenty of fire-wood, so we detained ten of our servants with us, and as we could not keep a fire in the tent without being incommoded with the smoke, we regaled ourselves with the hookah, cherry-brandy, and rum-punch, to keep out the cold.

June 9.—At sun-rise the thermometer was eight degrees below the freezing-point; we slept but little during the night from headaches and difficulty of breathing, and the chilling wind whistled through the tent, and kept us in constant alarm lest it should come down; for the ropes were indifferently secured, by a few short iron pins (the only ones that would penetrate the rocks), and some stones to which the ropes were tied.

We found some mosses on the few rocks, and saw several birds like ravens and linnets. Here, as at all lofty Passes, there are piles of stones erected by travellers, to propitiate the Deotas or Spirits of the mountains. This evening we had a smart shower of snow.

June 10.—The thermometer was 26° at sun-

rise. We marched at half-past eight, and in an hour reached our former camp at Kieejan, having slid down upon the snow beds a considerable part of the way. We proceeded down the dell of the Undretee, crossing the stream frequently by arches of snow, and passing over the ruins of recent avalanches, we gathered some leeks in full bloom, at 12,000 feet. The first bushes we met with were the Talsar, or Aromatic Rhododendron; these were succeeded by birches, oaks, pines, horse-chestnuts, and roses; at noon we reached the lowest point of the road, where the barometer marked 20.010 or 11,000 feet, hence the path ascended very steeply through a thick tangled wood, it was often rugged, and sometimes tedious, from our slipping back several feet upon the dry leaves of the pine; at 2 P. M., we encamped on a pleasant spot at the height of 12,300 feet, just above the limit of forest, on the bank of a rivulet named Deengroo, which rushes down a steep declivity of a single rock in a flood of sparkling spray. The distance from Shatool is seven miles.

The ground is a rich sward, cut up into

innumerable grooves, by a large kind of field-rat, without a tail.*

There was a shower of sleet and snow in the evening, but it did not lie on the ground. Our halting-place at Reoonee, across the Undretee, was visible; there the range is grassy, has a gentle slope, and there is little snow; on this side of the river the mountains are precipitous, showing large portions of naked rock; this is the case with all the Himalayan valleys, the face exposed to the N. W., being invariably rugged, and the opposite one shelving, and it may be remarked that the roads to the most frequented passes are on the gentle declivity.

We found the leeks pretty well tasted, but they would have been better had they been younger.

June 11.—At sunrise the thermometer was 35°, and water froze.

We marched at nine, and had a laborious ascent of a mile and a half; the path was very steep, and crossed several snow-beds, inclined at an angle of 20° or 30°. Here we were obliged to

* Spalax. (Mus typhlus?)

cut steps with a hatchet, which delayed us much; the next mile was less dangerous, but fully as tiresome; it led amongst gigantic oblong blocks of mica-slate and gneiss, disengaged from the impending crags that frowned above us; the latter part of the way to Sheear Ghat was better, and it rose gently upon snow and turf. This Pass is 13,720 feet by barometer. The ground here is plain for about 100 feet. It is a swampy turf, sinking some inches. From this spot the prospect is extensive; towards the Plains on the S. W., appeared the Choor mountain, 12,143 feet by barometer; on the east the flanks of Boorendo, but not the Pass itself; and to the S. E., snowy summits of immense altitude in the direction of Jumnoutree, rose one above another, in majestic disorder, presenting mountains of perpetual snow towering to the clouds. The source of the Pubur at the foot of Goonas Pass was visible, and beyond it one of the huge Ruldung peaks, upwards of 21,000 feet; across the Pubur to the S. E. is the Chasheel range, through which are several Passes between 13,000 and 14,000 feet; below us were

seen dark forests of oak and pine, and still further down, the villages of Rol and Jangleeg, with their green meadows and crops, interspersed with horse-chestnuts in bloom. From Sheear we descended upon soil, grass, and turf, and at the limit of forest we observed the barometer 19.560, equal to 11,800 feet; this is the general height of trees on the southern face of the Himalaya; the northern slope is not so steep, and has more soil, which is for the most part formed of decayed vegetables; it is better wooded than the southern declivity, and the trees extend higher. Three miles of a gentle descent, through a stately wood of tall oaks and pines, brought us to Tangno, a small district comprising five villages; we passed abundance of thyme, strawberries, raspberries, nettles, thistles, and other European plants. The height of this place is 8800 feet, and the houses are shaded by horse-chestnuts, walnuts, and apricots.

We wished to visit Soondroo Pass, and although we promised a large present if the guides would conduct us to the first snow-bed, nobody would

consent. After stopping some time, we marched at 5 P. M., and in an hour reached Jangleeg, 9200 feet; we descended 600 feet to the Seepon, and thence ascended 900 feet. At the union of the Seepon and Pubur, the streams are of considerable size; they are pent up between crags nearly perpendicular, overhung by oaks and pines, most part of whose roots are bare; the declivity of the land is very great, and the torrents dash with extreme fury over rocks, and exhibit nothing but a sheet of white foam. On our arrival we sent for the most intelligent people to inquire about Soondroo and Yoosoo Passes, they told us that the inhabitants of Tangno only were in the habit of crossing them; we made large promises if they would show us the way, but to no purpose; we called other people, and received the same answer, and after collecting almost every body in the place we dismissed them, as it was very late: shortly afterwards two of them returned, and on condition of receiving a handsome reward, said, they would conduct us to Yoosoo, but they would

not visit Soondroo upon any account. You shall have a description of Yoosoo in my next from Boorendo Pass, where we intend to halt a couple of days. Distance travelled to-day, $11\frac{3}{4}$ miles.

Camp, Jangleeg, 12*th June*, 1821.

CHAPTER II.

SNOWY PASSES.

Preparations for Yoosoo: ascend and cross Bundajan Pass 14,854 *feet: encamp on the bank of a stream at* 13,650 *feet; without fire-wood: visit Yoosoo Pass* 15,887 *feet in height: return: re-cross Bundajan, and strike off to the Eastward to Leetee on the way to Boorendo.*

June 12.—We made preparations to visit Yoosoo Pass, by reducing and packing our baggage, and taking only the most necessary articles with us; we sent the rest of our baggage to the highest trees towards Boorendo. We marched at noon, passing the highest cultivation at 10,000 feet. At first the way ascended steeply through woods, intersected by rills, trickling amongst soil and turf; we passed the dry bed of a lake, covered

with the most beautiful verdure; a little further we met with several caves, formed of large rocks of gneiss and granite, projecting out of the ground, and making an angle of twenty or thirty degrees with the horizon; there were eight or ten of the same kind, more or less inclined to the N. W., and at each were some posts stuck into the ground, to serve as a support for a covering to shepherds, who reside here in July, August, and September; we then took leave of the trees, and ascended gently on the summit of a range, which separates the Seepon from the Pubur; we encamped at a place named Beemchutur, in a fine sequestered hollow, sheltered from the chilling winds. The height of our camp was 11,950 feet, the oaks and pines were upon the same level, and the birches extended a very few feet higher; we found a single patch of snow in the shade of the rocks; this glen continues for half a mile, and ends in a bare rocky mountain on the N. E.

We had a fine view of the dell that confines the Seepon, it is bounded on the N. W. by a grassy spur of the Himalaya, about 14,000 feet,

the slope is gradual, and over it leads the road from Tangno to Zhanee, in Koonawur, by Soondroo Pass, said to be high and difficult, crossing a double range of snowy mountains. On the S. E. is the ridge upon which we halted, that divides the Seepon from the Pubur: in this place it is not above 12,000 feet, but it rises higher towards the Pass; to the N. E. the river takes a sudden turn, and is lost to view; in this direction appear lofty mountains, at an angle of 13° or 14°; one is about 18,000 feet; it has a broad table summit, and, for 3000 feet down, it is completely white with snow. To the S. W. the glen joins that of the Pubur; on either side, to the altitude of 11,500 or 12,000 feet, this valley is clothed with thick woods, presenting a variety of lovely tints; the trees, in general, are oaks, covered with lichens and creepers, of many curious forms; amongst them is thinly scattered the light-coloured ever-green pine, and above all appears a yellow belt of birches, intermixed with rhododendron. These are the last trees, but the talsar and juniper reach nearly a thousand feet higher; towards the

source of the Seepon the trees grow stunted, and in the form of bushes; they rarely go beyond 11,400 feet, they seem to shrink from a near approach to perpetual snow, and this remark applies to all the valleys on the southern face of the Himalaya. The Seepon rushes furiously through the glen with a loud noise, heard from our camp at least 3500 feet above its bed.

The dell of the Pubur is narrower than the other, and it is not so well wooded; on the left bank of the river the mountains are precipitous, and the forest is mostly pines, broken into stripes by numberless ravines; the altitude of this range is about 15,000 feet, and the snow lies deep for 2000 feet down, wherever it can find a resting-place; the limit of trees there is 11,800 or 12,000 feet, but on the right bank of the Pubur they scarcely rise to 11,400 feet; this difference of the elevation of forest is remarkable in the Himalayan glens, which, for the most part, run almost perpendicular to the range, or from N. N. E. and N. E. to S. S. W. and S. W., on the declivity towards the N. W., which we before observed is

most abrupt, the trees in general rise several hundred feet higher than those on the opposite face, and, in some instances, the difference exceeds 1000 feet.

The distance of to-day's march is only three miles, and we might have gone much further, but the guides objected, as there is no fire-wood nearer the Pass.

June 13.—Water froze, and the thermometer was 38° at sun-rise; at this height (12,000 feet) water appears to freeze every night, unless during the periodical rains.

We marched at seven A. M., and ascended for a short way upon soil and grass, we then lost all vestige of a footpath, and scrambled for half a mile over fragments of rock, shaking under our feet at every step; after clearing this ruin with difficulty, we had three miles upon the summit of the ridge, alternately upon sward, black soil, swampy ground, of the temperature of freezing, sinking over the shoes, and snow-beds, the upper three inches of which were partially melted.

We reached Bundajan Pass, where the baro-

meter showed 17.585, the temperature of the mercury 48°, and that of the air 35°, which gives 14,854 feet; we observed several birds like linnets, and had a good view of Yoosoo Pass, which seemed to be about three miles distant, and had an elevation of 3° 59′.

The dell of the Seepon, between Bundajan and Yoosoo, is shut in to the N. E. by snowy mountains upwards of 17,000 feet, amongst which the river has its source; the descent to the stream seemed gradual, and not above 700 feet, and the ascent to Yoosoo looked also gentle. Imagining we could visit the Pass, and also return to this spot, we ordered the baggage to the nearest trees. From Bundajan we descended easily for a few hundred yards, but the path became so steep that it was necessary to cut steps in the snow, and the bottom of the valley appeared so far below us, that we were sure we could not reach the pass and return; we therefore ordered the baggage to the bank of the Seepon; the descent was fully 1200 feet, and the angle from 30° to 34°, all a sheet of pure snow; several of the people slid

from top to bottom; I had no intention of doing so, but my foot slipped, and down I went with velocity; this is an easy and expeditious mode of descending snow-beds.

The Seepon, or as it is here called Yoosoo, after the Pass, is broken into several streams; we crossed all but the principal one by arches of snow; the largest which we forded is 40 feet broad, and six inches deep, the bed is full of pebbles, and the margin, which is snow, is washed by the river. The distance from last ground is five miles; we encamped at the height of 13,650 feet, near the bank of the stream, upon the S. E. face, which is free from snow, and covered with short grass, but there are no bushes; the rocks here and at Bundajan are gneiss.

This dell is like the other Himalayan valleys, the N. W. face is craggy, and the angle of the slope is often 50°, there is no vegetation, and the lowest 500 or 600 feet, are concealed by unfathomable snow, which has descended from above, and is the accumulation of ages; Bundajan is by far the most gradual acclivity, and consequently the

snow lies there in quantities. The S. E. aspect again is more gentle, its inclination being from 20° to 30°; at this season the snow is melted to the height of 14,000 or 14,500 feet, and there is a good deal of grass near the river. The level space in the bottom of the glen may be a bowshot across; here and there a few pebbles are seen, but with the exception of the principal channel of the Seepon, and some openings partially disclosing the smaller branches, the rest is a bed of snow six or eight feet thick; the river flows smoothly in an expanded bed, and this dell only wants wood to make it a delightful spot.

In the evening we took a walk of a mile down the valley, to where the Seepon seems to have forced its way through the mountains; we proceeded over snow-beds, crossing the stream by arches of ice of enormous thickness; now and then the river was visible undermining the snow, and passing below huge vaults, whose lower surfaces were formed of ice, clear as rock-crystal, from which the water dripped in showers.

A few inconsiderable streams take their rise on

the abrupt side of the dell, but from the other innumerable rivulets descend from the melting snow-beds, some making a bound of several hundred feet, over a perpendicular cliff, others bursting from the side of a mountain, and immediately forming large torrents, that leap from rock to rock in a succession of glittering cascades, whilst a few gush out of the ground, and trickle down the mountains with a gentle murmur.

The further we went, the glen became more contracted, till at last it was bounded by mural rocks of granite, with the Seepon forcing its passage between them in impenetrable obscurity, under immense solid heaps of indestructible ice running in ridges, and studded with tumuli of snow, shaped like inverted bottles; the fall of the torrent here appears to be above 20°, but it was not measured, the theodolite having been left behind. We noticed several flocks of birds like gulls, skimming along the surface of the Seepon, but we could not get near enough to take a shot.

At sun-set we returned to camp, if it may be

called one, for we had no tent of any kind; some large stones served as indifferent shelter to our people, who as well as ourselves passed the night without fire.

June 14.—The ground, and even our beds, were frozen, the thermometer was 24°, and from having no firewood, being exposed to the bleak and chilling winds from the vast snow-beds, and the sun being concealed by lofty cliffs, our situation was neither comfortable nor cheering; a few biscuits supplied the place of a warm breakfast, and cherry-brandy was a capital substitute for tea; our attendants seemed like ghosts, and we could not get them to stir before eight o'clock.

We sent our baggage to Leetee, a stage a little above the limit of trees nearest Boorendo, trusting that we should fall in with them in the evening.

We then set out on our visit to Yoosoo; we formed a motley group:—first went the three guides, who promised to conduct us to the pass; they looked not unlike banditti, which indeed they formerly were; but we knew well that they could be trusted; they were clothed in a brown-

coloured coat of woollen; as a girdle they wore a rope of many folds, made of goats' hair; in which was stuck a hatchet to cut steps in the snow, and a knife in form of a stiletto; their cap was of black woollen stuff, like a cone, and upon the whole they made a savage and formidable figure;—next came my brother James and myself, just as terrific as the guides: we had long beards, our clothes were partly Asiatic, partly European, and all the skin was taken off our faces by the sun and glare from the snow;—behind us were eight of our servants with the perambulators, theodolites, barometers, &c. We found the ascent extremely tiresome, although the road was pretty good, but whether from the little rest we had the night before, or from what, we were so completely exhausted at first, that we halted every hundred yards; we observed the thermometer every minute almost, in order to show the people we were doing something.

We purposed several times to turn back, and we certainly should have done so, had we not been ashamed before so many people, some of whom

we got to accompany us by much entreaty; after ascending a mile and a half, we partly got rid of this debility, and pursued our way to the Pass.

We crossed several inclined snow-beds in the ravines, and the last mile and a half lay over a field of snow; we reached the crest about eleven, completely tired; them ercurial column was 16.940, the temperature of the mercury 55°, and that of the air 35°, which, calculated from cotemporary observations made at Soobathoo, gives 15,877 feet for the height of Yoosoo Pass.

The peaks on each side seemed about 800 feet above us; the rocks, inclination and direction of the strata, are almost exactly similar to those at Shatool. Gneiss is most prevalent, but there is some granite and a good deal of mica-slate.

At the top there is a plain, covered with snow, of 400 or 500 yards, and the ground then slopes suddenly to the valley of the Sutluj. This Pass is situate far in amongst the Himalaya, and we consequently had not a good view; the Jumnoutree peaks were seen bearing S. 25° E., and Purgeool N. 51° E., under an elevation of 1° 11',

which agrees well with the former measurement of that mountain. We left Yoosoo at noon, and proceeded directly down the snow-beds; we sometimes ran, sometimes slid, and in a short time reached our former camp; after a halt to observe the thermometer we commenced the ascent of Bundajan, and, with frequent rests, we arrived at the top in one hour; the snow sunk from four to six inches, which was a great convenience to us. I before noticed that the angle of inclination is sometimes 34°, and I think this is the utmost that a person can ascend upon snow, unless it be furrowed, or steps cut; hence we descended upon broken slate, intermixed with snow, and at two P. M. observed the barometer 18.655, upon a level with the highest juniper, answering to 13,300 feet; after descending, often steeply, for three miles, on the bank of a rivulet, we fell in with the direct road from Jangleeg to Boorendo, whence to camp was an almost imperceptible ascent, along the face of a range with the Pubur a short way below us on the right. This day's march was upwards of twelve miles, and it was late when we arrived.

Here we found the whole of our baggage We encamped on a pleasant green spot, at the height of 11,600 feet; the trees do not attain this elevation on the face exposed to the S. E., but on the opposite side of the Pubur they reach to 12,850 feet. The river was unfordable, so we had to send back a full mile for fire-wood.

This place is called Leetee, from a stream so named, which rises in a snow-bed on the north, and forms a beautiful waterfall; opposite us was seen Galre Pass to Lewar, which is between 14,000 and 15,000 feet high, and leads over a spur that runs down from the Himalaya, and divides the valley of the Pubur from that of the Gosangro, one of the branches of the Tons.

Camp Boorendo, 16th June, 1821.

We intend to visit all the Passes near this; so, as we shall be several days amongst the snow, I shall not have an opportunity of writing till we reach Sungla,

CHAPTER III.

SNOWY PASSES.

Ascend Boorendo Pass 15,121 *feet: cross the great outer Himalayan chain: descend and enter the romantic valley of the Buspa: visit Neebrung and Goonas Passes, upwards of* 16,000 *feet, Ghoosool* 15,851, *and Roopeen Pass* 15,480 *feet: descend to camp at Donison: visit Nulgoon Pass* 14,891 *feet, during a shower of snow: and descend to Sungla on the bank of the Buspa River.*

June 15.—At sun-rise the thermometer was 34½°. As we had to collect fire-wood for the Pass, we could not march before 3 P. M. We had previously sent off all the baggage we did not require, to Sungla, and therefore took but few articles with us. We arrived at the crest of Boorendo Pass by sun-set; for the last part of the way the angle of the ascent was between twenty

and twenty-five degrees, but the road was good, for the most part on rocks, occasionally interrupted by snow-beds. To-day's journey was five miles.

June 16.—The thermometer at sun-rise was 22½ degrees. As is usual at these elevations, we slept but little, and were troubled with head-aches and extreme difficulty of respiration; the night was calm, and its solemn stillness was only interrupted by the crash of falling rocks, and by the groans of our attendants, who had no shelter, but were abundantly supplied with fire-wood. Now and then the fall of a near peak, split in pieces by the frost, alarmed us, and made us start out of bed; our situation was very disagreeable, and we sighed for daylight, that we might see our danger. The guides left us at sun-set, and passed the night at the highest trees.

June 17.—At sun-rise the thermometer was 24°, and during the day it ascended to 49°, which was the highest. We compared several barometers, of our construction, with two by Dollond, and they agreed exactly. In 1818 we made the

height of this Pass 15,095 feet, but the observations taken this year give 153 feet more, which is owing to the temperature in June being higher than in October.

June 18.—At sun-rise the thermometer was 30°. For these two days past we had in vain been endeavouring to persuade the guides to accompany us to the source of the Pubur, and thence across one of the high Passes to the valley of the Buspa; but they represented these Passes to be so steep as to be impracticable for loaded people at this season; we stopped several hours in hopes of being able to prevail on them to show us the way, but in vain; so we were consequently obliged to proceed by another road which made a circuit.

We left Boorendo at half-past twelve, the first mile and a half led over snow, which, as the declivity was pretty steep, we slid down most of the way, by seating ourselves upon a blanket. This mode of descending is invariably practised by the mountaineers where there are no rocks; then we had a dreadfully dangerous footpath

along the rugged side of the dell. It led through several clumps of birches, and crossed eight or ten snow-beds, inclined at an angle of 30° or more, below which, at the depth of 500 or 600 feet, were piles of large stones; the snow-beds delayed us considerably, as the guides had to cut steps, or rather notches, of a few inches, for the feet. Here, on the northern face of the Himalaya, the upper limit of birches is almost 13,000 feet, and the pines and oaks, which run in belts, are only a couple of hundred feet less. We took leave of the trees and ascended a grassy spur to Sheoo Ghat 13,350 feet, thence the way descended towards the N. E. to the limit of the forest; the extreme altitude of the birches was observed at 12,800, the pines at 12,000, and the highest cultivation, which was P'hapur, at 10,650 feet; near this are several detached houses, the summer-residence of shepherds. Two miles more descending through pines, currants, and roses, brought us to Soang, a village in Koonawur, which we reached by six P. M., after a journey of nine miles. Some of the pines attain a great

size, and we measured one, close to the village, thirty feet in circumference. The height of this place is 9100 feet, and the village is pleasantly situate, shadowed by apricots and walnuts, which surround it to some distance; here there is only one crop, and it is poor; the grains are P'hapur, Wheat, Barley, Ooa, Chabroo, Ogla, Bat'hoo,* and Peas. Snow generally lies here for five months, and the rains are pretty regular, but not so heavy as on the southern face of the Himalaya.

June 19.—Marched at 5 A. M., the thermometer being 55°; at first we had a steep descent of 1800 feet, through many varieties of forest-trees, to a middling-sized stream, whence there was a fatiguing ascent of three miles to camp at Chasung, which is about the same height as Soang; the road was tolerable, and it lay chiefly amongst pines of three kinds. We stopped here till 3 P. M. and then proceeded to a hamlet named Chamaling, about 4½ miles from Chasung; the path descended

* Bat'hoo, Amaranthus anardhana; Ogla or Ogul, Fagopyrum emarginatum.

steeply to the level of the Buspa, a noble river running smoothly through a romantic valley, which the people have a vague tradition was formerly a lake, and it has every appearance of it; the channel is broad, and the stream forms many islands of sand and pebbles, overgrown with barberries and willows. The level space is frequently almost a mile wide, and it is beautifully laid out in fields, and diversified with apricot, peach, and walnut trees. For three miles the road lay in this valley, and we crossed the Buspa twice on wooden bridges, on account of an impassable cliff; we passed the fort of Kumroo, situate on an abrupt rock, upon the right bank of the river, and encamped in a field of beans near the union of the Boktee, a stream of some size, with the Buspa, and opposite the town of Sungla.

This valley is bounded on each side by abrupt ranges of the Himalaya, which present a great deal of bare rock; at the bridges, where the Buspa is narrowest, the breadth is from 77 to 83 feet, and the elevation of the bed 8500 feet. The distance to-day is nine miles.

The grains produced are the same as at Soang, and there are turnips, peas, and beans, and a few potatoes. The periodical rains extend partly to this valley, and in consequence the vine does not thrive.

June 20.—Marched at 7 A. M. For three miles the road ascended pretty steeply, but it was good, lying partly through pines, partly amongst cultivation, and passing many hamlets belonging to Sungla; the fields are wheat, which extend to 11,000 feet, the barometer being 20.160. Hence the ascent was more gentle upon the south-eastern face of a grassy range, richly adorned with flowers; the Boktee lay upon our left, rushing over stones with a loud noise.

This valley resembles the others here, the S. E. slope being gentle, grassy, and generally unwooded; the other side again is very abrupt, and cut up by ravines, with belts of birch and pine: the upper limit of pines is 12,000 feet, and that of birches 12,900 feet; we passed several lakes and swamps fringed with black turf, resembling peat, and encamped at Nooroo, a stage for travel-

lers, where there are several good caves for shelter; a mile below this the Boktee is joined by the Nulgoon, a stream coming from the Pass of the same name; the distance travelled to-day is 9 miles, and the height of Nooroo is 13,150 feet.

June 21.—The ground was frozen, and at sunrise the thermometer was 37°; the clouds began to collect about the Ruldung Peaks, and we much feared that the rainy season was at hand, and we should not have sufficient time to visit all the Passes; we left our camp at half-past eight, and continued ascending by an excellent foot-path for nearly two miles, to another halting-place named Donison, where seeing a tolerable spot for the tent, we ordered it on here; half a mile more brought us to the inferior limit of the snow-beds, which we found to be 14,700 feet, the road then lay over deep snow, for a mile and a half, and it ascended easily to Neebrung Pass, which has the appearance of a gateway, and leads between two perpendicular rocks, 35 feet high. We stopped here for an hour, and took several observations of the barometer, which was 16.867, equal to 16,035

feet, the difference between the temperature of the air and sun was greater than we had ever observed it, the former being 35½°, and the latter 104°.

Three hundred yards along the top of the ridge brought us to Goonas Pass, 16,026 feet; it was needless to try the barometer here, so we only observed the altitude of Neebrung with the theodolite; we proceeded along the summit of the range a quarter of a mile more, to Ghoosool Pass, where the barometer showed 16.950 answering to 15,851 feet. These three Passes lead from Sungla to Chooara, and although they are so near to each other, they can only be crossed at different times; Neebrung is first open, and it had become practicable only a few days before we arrived, the other two Passes were shut, and had not been attempted this year.

We left Ghoosool at 1 P. M., and in an hour reached Roopeen Pass, by barometer 15,480 feet, the road then descended alternately upon snow-beds and swamps, for 2½ miles to Donison; the journey was 8½ miles.

The rocks found at all the Passes are gneiss and granite, the former being most prevalent.

June 22.—At sun-rise the thermometer was 31°. During last night, as well as the former, there was a continued crash of falling rocks on the rugged side of the dell. We ordered the baggage to the highest hamlet above Sungla, and marched at eight for Nulgoon Pass; we proceeded a short way along the former road, and then crossed the Boktee by an arch of snow: here the path was of the same description as all those on the north-western face of the range, rugged and abrupt in the highest degree, and passing over snow-beds much inclined to the dell below; when we turned round the spur at the junction of the Nulgoon and Boktee rivulets, the road was suddenly quite changed, the craggy declivity being on the opposite side of the stream: the path lay upon turf, it was good, and sloped gently up the glen, which is broader than most others; the Nulgoon river frequently expands into large and deep sheets of water.

At the bottom of the continued snow, the baro-

meter was 18.100 or 14,200 feet, and in the vicinity we observed the plant named Talsar, which may be called aromatic Rhododendron. It had been cloudy all day, and here we took shelter for half an hour amongst some rocks, to avoid a heavy shower of snow and hail; we then proceeded up a moderately steep snow-bed to the Pass, which we reached at noon: Nulgoon is the lowest Ghat through the Himalaya that we had yet visited, it is only 14,891 feet, the barometer being 17.500, and the temperature of the air 33°, here we had a smart shower of snow accompanied with a high wind, which made it troublesome to put up the barometer.

From the Pass we descended in the valley of the Nulgoon to its union with the Boktee, the road was good, and often led over old snow-beds, thence we proceeded along the bank of the latter stream, and encamped at Seroden, a hamlet of two houses at the highest cultivation. The length of to-day's march was $11\frac{3}{4}$ miles.

June 23.—At sun-rise the thermometer was 44°. Marched three miles along the road we

before travelled, crossed the Buspa, and encamped at Sungla; the height of this town is 8,600 feet, and during five days that we halted here, the temperature of the air varied from 49° at sun-rise, to 66° in the middle of the day; it was very cloudy, and much rain fell, so we congratulated ourselves at having seen so many of the Passes, and enjoyed ourselves by the side of a blazing fire, in a very comfortable and neat temple. Just above us the huge Ruldung mountain, upwards of 21,000 feet, is seen under an angle of 28° 13′. This range was generally obscured by clouds, but on the 28th it was clearly visible, and by measurement we found that the snow had descended so low as 13,200 feet in the last few days, although it was almost 15,000 feet before.

Camp, Sungla, 28th June, 1821.

CHAPTER IV.

VALLEY OF THE BUSPA.

Route from Sungla to Chitkool up the valley of the Buspa river: fruitless attempt to reach Kimleea Pass: immense snow-beds: heavy snow shower: dangerous situation from sinking: attain the elevation of 15,500 *feet: impossibility of proceeding further: return to Chitkool.*

June 29.—We moved our camp from Sungla to Rakcham, distant $6\frac{3}{4}$ miles. The road was generally good, lying in the dell, which is from a quarter of a mile to three furlongs broad. For the first two miles you meet with cultivation, intersected by thousands of apricot, peach, and walnut-trees, loaded with fruit, and here and there a shepherd's hovel. Hence is a large plain, nearly half a mile in diameter, formed of granite gravel,

in which unfriendly soil a few ill-grown deodars vegetate. Through this the Buspa winds in several streams; beyond it there is a steep ascent of half a mile, over tremendous blocks of coarse-grained granite, the decomposition of which seems to have formed the present bed of the river, and gives the water its turbid appearance; the granite is white, and from a distance looks like chalk. The Buspa has here a very great fall of many hundred feet; I was not in view of it, but can imagine a grand effect from such a body of water. From the top of the ascent I had a glimpse of the high Pass to Chungsa (Neilung), bearing S. 53° E. I could see two ranges, the nearest almost black, but beyond it were mountains of snow. The road was now level for a mile and a half; sometimes stony, and a bowshot from the Buspa; the first part leads through fine green pasture-lands, and fields watered by streamlets diverted from their course by the hand of the mountaineer; and latterly, through a thick forest of various kinds of trees, chiefly willow, red-rose, and hazel.

The valley thus far is of the same nature as

most others formed by the Himalaya, but considerably wider. The face of the mountain exposed to the S. W., which is part of the masses of the Kylas, presents abrupt precipices and threatening cliffs, with little soil, and but few trees. The opposite face again is more sloped, and is thickly wooded with pines below, and above with birches. To the south (or the direction perpendicular to the great chain) the mountains have a good deal of snow on and near their tops, the upper surface of which appears to be fresh, and must be the remains of what fell on the 24th and 25th, when my camp was at Sungla, and which I found by measurement to be so low as thirteen thousand two hundred feet (13,200) from the level of the sea. To the north the snow is only seen in stripes in the ravines; the last half mile is a slight but rugged descent upon enormous masses of granite. The dell near Rakcham has a pleasing appearance, and expands to three furlongs in width, half of which is laid out in thriving crops of wheat and barley, and the rest is occupied by sand-beds, which form many small islands

in the river. The village of Rakcham is about 10,500 feet high; the barometer (Dollond's), which you know was in excellent order, and agreed with the others, showing 20.520. It is situated in the western corner of the glen, under huge piles of bare rock, which rise abruptly in numerous black spires, to about 9000 feet higher above the village; the nearest pinnacles have an angle of 40°, and even more.

To-day we crossed two large streams (feeders of the Buspa) flowing from the Kylas, the Chooling, and Gor; up the course of the last there seems to be a break in the range, but I understand there is no road. From this place there is a Pass to the southward, leading to Lewar of Gurhwal, which branches off into two, near the crest of the range: one to the westward called Lumbeea, and that to the east, Kimleea. I wished to have visited them, but the villagers, as you might expect, made great objections on account of the difficulty and delay in crossing the Buspa, there being no Sango, and the river having risen greatly within the last three days: had I urged

the object, it is probable, I might have got a bridge constructed in a short time; but I was less anxious for it, since there is a road from Chitkool to Kimleea and Lumbeea.

On the 30th I proceeded to Chitkool, the last and highest village in the valley, distance $6\frac{1}{2}$ miles. For $2\frac{1}{2}$ miles the road was quite level, first amongst fields, then, entering a beautiful and heavy forest of pines (the species named by the natives, Raee), which often sheltered us from the rays of the sun. The Buspa, a short distance on my right, rolled over pebbles, sometimes smoothly in divided streams, sometimes in one, rushing with rapidity. From this spot I had a view of part of the road up the course of the Sering to Lumbeea Pass; the angle of elevation is only 10° 34′, and no snow is visible as far as you can see. I should have thought it a low Pass, but the guides told me that on the way to it there were two Snowy Ranges, confining a branch of the Tons, and they were both high. For the next $1\frac{1}{2}$ mile the road is not so good, being encumbered by many water-worn stones,

and crossed by fallen trees which have lost their hold in the soil from the practice of setting the grass on fire. Two considerable streams were met with, the Mungsa and Shootee; on the banks of the latter, the stones are piled up in high ridges like those at Shatool and Boorendo. As you proceed the soil becomes more scanty, and there is less grass, but abundance of sweet-smelling flowers. The level portion of the glen continues much the same, varying from a quarter of a mile to three furlongs in breadth, and is well wooded with Raee pine. A little further on, there is an extensive plain, without trees, the ground being literally covered with thyme in full bloom, which perfumes the air; then there is a pile of large stones tumbled from above; the road lies over these for a mile, and the footing is difficult and insecure, with many short ascents and descents upon the loose fragments.

The dell here becomes more contracted; this side (the right bank) being very precipitous, and almost mural to the Buspa, which dashes amongst the rocks with a loud hollow noise. The last

$1\frac{1}{4}$ mile to Chitkool is quite plain, through the fields, and along the margin of a canal, which it crosses many times. This village is higher than I expected: the barometer now stands at 19.760, which will give about 11,400 feet. I got no star last night for the latitude, but should think it about 31° 20′. I observed double altitudes of the sun, but have not yet worked them; the chronometer makes it $9\frac{1}{2}$ miles east of Sungla, which is not far wrong. Above this the valley is about 800 yards wide for two or three miles. The Buspa then makes a bend more southerly, and the view to the eastward is shut up by snowy mountains of great height. The banks of the river are grassy, and form gradual slopes; and on this (the right) are a few straggling pines, but no other trees. Opposite, they extend 400 feet higher, or to 11,800 feet, but they are all stunted. Beyond this limit, birches again appear, and rise to about 13,000 feet. A mile up the dell the trees cease to grow.

There are two Passes to the southward; the Kimleea leading to Lewar, and the Sugla to the

east of it, communicating with Boorasoo: I shall take a look at both, and then attempt that to Neilung, if I can persuade people to accompany me. Most of my baggage has gone off to Kimleea, and I shall move in a short time. The Pass to Charung* has a formidable apppearance from this; the elevation is 25°; and from the edge of the dell it must be at least 35°.

Camp Chitkool, 30th June 1821.

" I wrote to you before on my progress to this place, and my determinations in the neighbourbourhood, the result of which you may perhaps be anxious to know, but you must neither expect a very long, or a very amusing account, as I am suffering from severe cold, the effects of the snow, which beset my prospects, and chilled us to the

* The Charung Pass leads behind the clustered peaks of the Kylas to the Teedoong dell; the ascent from the Buspa is difficult, and made dangerous by the aspiring forms of the rocks; the elevation is great, and much eternal snow occurs in the sheltered situations; but this direction saves the circuit by the Sutluj, and will be chosen by the traveller on his return from Neilung for other reasons.—J. G. G.

bones. Having heard of two or three Passes quite close, I wished to employ my time to every advantage, and decided on reaching Kimleea, and returning to the nearest trees in one day, an undertaking which I was convinced I could accomplish in good weather without much difficulty, considering the great elevation of my camp; viz., 11,400 feet. Accordingly, on the 1st of July, after an early breakfast, I began the excursion by descending into the bed of the Buspa, which is about 200 feet below the village, the barometer showing a rise of a tenth and half, and marking 19.941, and the temperature of the stream 41°.5. We crossed it by a sango of two trees fastened together by the usual transverse basket work; the river here is sixty-five feet broad, and extremely rapid and muddy; hence we had a steep continued ascent of two miles and three quarters, generally upon soil and turf, passing through a forest of pine, birch, and yew, and soon rose above them, but there were abundance of juniper-bushes, and the shrub to which you recollect we gave the

name of aromatic rhododendron.* The road was pretty good, and lay a short distance from the right bank of the Rosoo, a large stream flowing from the Pass; both ridges of the dell are slaty and much sloped, with grass in some places, and in others crumbling in pieces. Opposite, across the dell, at a point that seemed to be on my own level, were the highest birch-trees, and I put up the barometer, which gave 18.498, and will answer to about thirteen thousand feet. (13,000). From this spot, the road, or rather the worn track, is very bad for one mile and a half, lying in the course of the stream, which is here

* This is a shrub, having the character of the Rhododendron, in the number and form of its leaves; they are five, like a hand crowned by a tuft of yellow flowers, resembling a rose; hence the name, from ῥοδον a rose. It vegetates on the elevated regions between eleven and fourteen thousand feet, and in the season of blossom, perfumes the air with a highly aromatic fragrance. It occupies the zone above the larger trees, thriving best on the north and west faces of the mountains, where we find it in conjunction with rhododendron and juniper, but more hardy than either, it rises to the confines of the eternal snow, and is among the few of the arborescent productions that accompany the traveller, in ascending the Himalaya.—J. G. G. R. aromaticum.

increased in rapidity and turbulence to a torrent, and foams in dreadful agitation and noise. Amongst the scattered stones our footing was sometimes upon water-worn pieces, but most commonly on pointed fragments of rock that have descended from the cliffs on the left, which rise abruptly in a variety of wild shapes, and appear liable to be detached by the slightest puff of wind. The stream here is derived from a double source, one branch rising in the snow of the Sugla Pass, which bears S. 10° W., and the other, or smallest, in that of the Kimleea, about S. W. For the next two miles the road ascends gradually upon snow of immense depth, in the channel of the current, which now and then shows itself in blue deep stillness, passing along the margin of a lake 150 feet in diameter.

We found our situation very dangerous; smooth and solid ice casing the declivity to the lake at an angle of above 30°. In this we had no footing, till notches were cut in the ice by an axe, an operation which delayed long our progress. It was already 10 o'clock. and it

began to rain, but we kept in motion, first ascending for one mile and a half on a rocky ridge, in the middle of the valley, or rather glen, since it is only about three furlongs broad, with several streams running below the snow, which, sinking in some places by its weight, discloses the water. Hence onwards half a mile over mounds of unfathomable snow; yet so loose and shallow as scarce to be capable of supporting us at the depth of three feet, but sometimes indeed our extended arms only kept us from settling lower, and altogether. The people of Chitkool had previously observed to me this state of the snow, but I did not expect to find it to such an extent. The cause of it is difficult to explain, and it cannot be traced to any general source, or we should find similar appearances at the other Passes, and at none of those that have occurred on the route had it been remarked; we might suppose it to arise from the permanency of frost, or a state of it that arrests the progress of a thaw by the sun's rays, and of a subsequent congealing of the mass. The upper surface only had the least hardness; below,

it was powdery, and exactly of the sort which you will recollect used to give us so much uneasiness at home from its want of cohesion in making snow-balls. The guides told me that early in the morning, before the sun had any effect, it bears the weight of a loaded person in this month, although in May and June, when the Pass is most frequented, it does not sink at any time of the day. At a quarter past two, we reached a few rocks, and as we were wet through by the sleet, which continued to fall as thick as ever, I halted in hopes it would give over, and put up the barometer, which stood at 17.058, or nearly the height of the Shatool.* The dell here is about half a mile broad, and covered with snow in high wreaths. The right-hand mountains which have a S. E. exposure, are nearly bare, a few patches of snow only appearing at great heights, with little soil and a poor vegetation; I reckon the line of cliffs about seventeen thousand five hundred feet,

* Fifteen thousand five hundred and fifty-four feet above the level of the sea, or nearly equal to the height of Mont Blanc.—J. G. G.

(17,500). On the left the mountains are nearly of the same height, and present a chain of mural precipices topped by sharp pinnacles, eaten away by frost into forms like towers and steeples. Much of the rock near the summits is exposed, and the snow, having lost its hold on their steep craggy sides, has accumulated below.*

* It is a general observation, that the south-west and west aspects of mountain ranges, are precipitous and rugged, while their opposite faces slope less rapidly, and spread out over a greater extent of country. These characters are peculiarly striking throughout the various ramifications of the Himalaya, and no where so remarkable as in the central ridge itself. The traveller, in tracing the streams to their source in the snow, observes, that the north-west exposures of the ridges, present bold and inaccessible masses, heavily wooded and thick set with plants, till the bare rock and accumulations of snow only stop their growth. On the other hand again, to the south-east, the mountains soften into a sloped and regular surface, where trees are less active, and generally cease to reach their level; on the northern faces, the soil affords the richest pasturage, the limit of which seems only to be regulated by the line of congelation. It is this disposition of the rocks, or what geologists call the dip of the strata, that forms those inclined planes which so much astonish the traveller; the angle of the slope varies from 25° to 55°, they fall down from the highest crests in one pure sheet of snow, and produce an effect, which language fails to describe.—J. G. G.

The Kimleea Pass from this place bore S. 67° W. It appeared about two miles distant, and fourteen or fifteen hundred feet higher, and the whole way to it is over the snow. I rested here till a quarter before four P. M., by the watch, which however stopped twice while travelling, and I was uncertain of the time, having no sun. The sleet still fell thick, without any prospect of its clearing up, and as we were all dripping and shivering in a strong wind, at the temperature of the freezing-point, I thought it prudent to order a speedy retreat, especially as the guides became greatly alarmed. We made slow progress through the half mile of sinking snow, but hence leaving the line of our ascent, we ran down the firm snow-bed, and crossed the Roosoo by a large arch of it, the surface of which is laden with soil, stones, and rubbish, the slow gatherings of ages, from the heights above. We reached our camp, at the birch-trees, at half-past five by the watch, which on comparing with the chronometer, I found half an hour slow. Had the day been fair, I am very sure I could have made out the Pass, and returned

to the camp in good time, but you know what exertion is required to move at all under such circumstances, when the wind at the temperature of the freezing-point, blows the moisture of the wet clothes, as it were through the body; and I do not think I could have reached the Pass, even had I been in motion the whole time; the shower of sleet continued with us the greater part of the descent, and latterly changed to rain with a milder climate. From the craggy side of the dell, the rocks were loosened by the rain, and followed each other in their fall, in a continued crashing, and some pieces tore up the path, at a few yards from us.

I forgot to tell you that I had several good observations of the Pass to Charung on the way up; from fourteen thousand one hundred feet (14,100) it had an elevation of 6°, and allowing for the breadth of the Buspa dell, I think it must be seventeen thousand five hundred feet (17,500). I intended to have attempted the Passes again, but the effect of the rain and sleet left me no choice, unless that of returning to Chitkool. I am half

determined to halt here to-morrow, and if I am not then in travelling condition, I shall defer the journey to Neilung, and proceed by the Pass in the Kylas to Murung, from whence viâ Nisung to Bekhur. Had I reached the Kimleea Pass it would have been a respectable day's account, since the Perambulator gave the distance 13. 1. The Sugla Pass to Boorasoo is said to be more difficult, and the snow lies eternal over a greater space.

Camp Chitkool, July 3, 1821

P. S. I had no opportunity of sending off the former letter, so they will both go together.

CHAPTER V.

PASSES IN THE HIMALAYA.

Danger of crossing the high Chungsa Khago range at this season; endeavours to persuade the Guides to attempt it ineffectual; march towards Charung: Halt at Shulpeea 14,300 *feet: heavy rain: mild temperature of the air: cross Charung Pass* 17,348 *feet: great difficulty and danger experienced; descend and enter the valley of the Teedoong; rugged nature of this dell: reach Murung on the bank of the Sutluj.*

I wrote you of the failure of my attempt to reach Kimleea Pass, and I should have made another, but the state of my health decided against my inclination. I am now in the old line of route by the Sutluj, in progress to Bekhur on the Table land; but as I shall stop here to get an observation for the rate of the Chronometer, I cannot do better than lead you over the ground

travelled since the date of my last letter from Chitkool, which is a new route, amongst the ruins of the Kylas; and from the height of the Pass, and the difficulties and dangers of the road, it will require a longer attention than any of my former letters. I halted at Chitkool on the 3rd and 4th, and amongst other inquiries, I got more information on the Passes to Gurhwal, which you will not consider uninteresting, however free of incident, since it is only by a collection of such concurrent materials that we shall ever become acquainted with the nature of this extraordinary country.

From near Rakcham a road leads to four Passes which communicate with Lewar, the Barga, Lumbeea, Marja, and Seenga, situated as close to each other as those that open into the lake of the Pabur,* and, like them, they are crossed in dif-

* The Passes here alluded to, are the Neebrung, Goonas, and Goosool, which communicate directly between the valleys of the Buspa and Pabur. They cut the Himalaya ridge within the space of three furlongs, and at nearly the same level, at an absolute elevation of fifteen thousand seven hundred feet (15,700), which is about 1000 or 1200 feet

ferent months, according to the state of the snow, which varies its form with the nature of the ground beneath it. The Barga is most accessible, and is generally open for six or seven months in the year; the others are only traversed during two or three. Further east is the Kimleea Pass, leading direct from Chitkool to Lewar: it is open in Jyt'h, Bysak' h, Jet'h, and Ashar (March, April, May, and June), but no later, as the snow then breaks asunder, forming rents and chasms that dare not be approached. East again of it is the

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below the highest summit, on one side, and only 400 on the other. Considering that the chain is here traversed in its crest, along which the snow forms a cliff, with no intervening peak or protuberance between the Passes, and that they all open upon the basin of ice which feeds the sources of the Pabur, we are surprised to be told, that they are frequented at different periods of the year, according to the state of the snow in each at the time. In some, at certain seasons, it separates, leaving deep and dangerous rents, which cannot be crossed; and often breaking loose, is precipitated in whole fields, with a noise louder than thunder. When this is going on in one Pass, the route leads by another. They all enter the region of perpetual congelation.—J. G. G.

Sugla Pass, crossed during six or seven months; it leads to Boorasoo, from whence there is a road to Jumnoutree and Gungoutree. All those Passes are travelled by loaded sheep and goats.

I in vain endeavoured, by extravagant offers, to get a guide to accompany me to Neilung; and from what I experienced on the passage of the Charung Ghat, I am now quite convinced that this is not the proper season for traversing the more elevated ridges. April, May, October, and November, are said to be the most favourable months; since a single rainy day would make the attempt very dangerous. Several years ago, eighteen people perished in crossing to Neilung, since which time few loaded travellers have ventured by this route, and the tribute of copper and lead to Bussahir is generally sent by Bekhur. All my informants stated that there was, on the smallest allowance, one and a half day's journey over the snow; and they added, that my people could never accomplish it without a covering of sheep-skin from top to toe. At Chitkool there is one Lama. He is of the Geloopa sect, who wear yellow caps; there is

also a Mane * and Chostin,† and two or three wooden cylinders, which are turned on their axes for sacred purposes.‡ The Lama chiefly holds his situation and procures subsistence by writing

* This is a long narrow tumulus of stones, like a dyke, on which are placed vast numbers of slabs, and large pebbles covered with hieroglyphical inscriptions.

† This is a small square building, surmounted by a knob. and painted different colours, and enclosed on three side by a roofed wall. Three or four are sometimes together in a row. They are objects of sanctity.

‡ These whirligigs, or wooden cylinders, are filled with rolls of sacred writings, and move on points like a horizontal wheel: they are set in motion by sojourners or pilgrims, and by the residents of the spot, for devout purposes; although these give place to more worldly calls as the occasion suits, as appears by Mr. Moorcroft's narrative. When at the town of Daba, upon the bank of the Sutluj, he says, "On leaving the temple, we were desired to turn some wooden cylinders, supported on iron pivots in recesses in a wall, and to go round the building seven times. Whether this was mentioned merely to enhance the sanctity of the place or personage (Lama), or was really the custom, I know not; but the ceremony was interrupted after one round, by a message from a priest, that the guide, officiating master of ceremonies, was wanted elsewhere. He understood the signal, and went to a small door, which, when knocked at, was opened by a laughing, ugly fellow, who pointed to four coils of shawl-wool, for which a bargain was immediately struck."—J. G. G.

and printing, from a block of wood, sacred sentences.

On the 5th I proceeded towards Charung, and encamped a little above the highest juniper, barometer at 17.800, which answers to about 14,300 feet. The distance did not exceed $2\frac{3}{4}$ miles, but the general ascent was nearly 30°; the road, frequently good, was upon the bank of a stream, sometimes free, at others concealed under stones. Angular blocks of granite now and then were passed over, and soil producing juniper and thorny bushes. We halted at Shulpeea, a resting-place for travellers, and had scarcely arranged our small camp when it began to rain, and continued heavy and incessant for the following three days, during which period neither presents nor promises could induce the Chitkool people to move. From this spot the valley of the Buspa has a fine appearance. A few houses of Chitkool were visible, bearing S. 22° W., with a depression of 20° 31′, which will give an hypothenusal distance of about two miles. Green crops of wheat and barley were in view in the dell, and offered a lively contrast to

the muddy impetuous stream of the Buspa, whose hollow roar was distinctly heard. Across the dell to the S. W., the mountains, which have an elevation of 8° or 9°, are white with snow near their tops; lower down, much of the rock appears, from which the snow descends in stripes along the hollows, nearly to the upper limit of the birches, which overtop all the other trees. Part of the road to Kimleea Ghat, over vast fields of snow, was observed bearing S. 23° W. The Pass itself, lying more to the westward, was not visible. The mountains in the neighbourhood of Charung Pass are almost bare. The rock is of a slaty gneiss, marked by long decay and the action of frost, which has worn it bluff: other portions are solid masses unchanged by time, but the predominating form, is crumbling at its surface. All my heights hitherto had been observed with Dollond's portable barometer: and here being detained by the rain, I put up another well-boiled tube, and was glad to find them agree so nicely, the difference never exceeding .010, which you know is often less than the error of reading off.

The climate at this height was milder than I expected, considering that, only ten days earlier, snow had fallen 1000 feet below this level. At sun-rise the thermometer never was under 42°, or higher than 53°, in the middle of the day; an equality of temperature owing entirely to the presence of fog and rain.

The 9th was cloudy at sun-rise; but it did not rain, and the guides, who I conclude were as tired of the place as myself, said they would attempt the Pass, although they dreaded the fall of stones, and the delay from the sinking snow. We were all in motion by 8 A. M. The Lama, solicitous for our safety, or rather his own, invoked the protection of the gods, and was very expert in repeating the sacred words *Oom Manepaee me Oom.** He prayed for a fair day, but with no effect; for we had not proceeded a quarter of a mile when it rained, and did not cease the whole day.

* On this head Turner says, "We reposed amidst gods and whirligigs. It is necessary to explain that this machine is no other than a painted barrel, which revolves upon an axis. In the twirling this instrument about, and repeating at the same time the magic words, 'Oom Mane paee me Oom,' consists a material exercise of their religion."—J. G. G.

The road for three quarters of a mile had an ascent of 31°, the best idea of which may be conveyed by the difference of the barometer: here it showed 16.936, the temperature of the air being 39½. This answers to about 15,700 feet, or a perpendicular ascent above the camp, of 1400 feet. From this place I got a bearing of the Pass, north 32° east, at an angle of 16° 47′: hence for an equal distance there was an easier ascent upon a ridge crossed by snow-beds, giving way up to the thigh. About the height of 16,300 feet, the barometer being 16.536, there commenced the perpetual snow in continuous beds: the next half mile was also on a gentle acclivity over the snow, which gave way to the depth of two feet; and lastly, we ascended the steep slope to the Pass. It was scarcely half a mile, but it surpassed, in terror and difficulty of access, any thing I have yet encountered. The angle was 37½° of loose stones, gravel, and snow, which the rain had soaked and mixed together, so as to make moving laborious and miserable; and it was so nearly impracticable, that although I spread myself on all-

fours, thrusting my hands into the snow to hold by it, I only reached the crest by noon, and then under great exhaustion. The whole distance from camp was scarce two miles and a half; but the feet and hands were frozen by so long an exposure to the snow. Several stones broke loose over our heads, and one of immense size bounded within a few feet of us. From the numbedness of my hands, and the violence of a freezing wind, which drifted the snow upon us, I had extreme difficulty in setting up the barometers; but I got an observation of both: Dollond's portable gave 15.852, the plain tube 15,860, the temperature of the air 33°; which will make the height of the Pass, seventeen thousand, three hundred and forty-eight feet (17,348) above the sea. I noticed the same circumstances here as at the Shatool: when I left camp the mercury seemed to be pure; but at the Pass, it lost its lustre, and adhered to the fingers and cup as if it was amalgamated. The whole way from the Buspa to the Pass, the rock is granite or gneiss; but to the N. and N. E. it is of a blueish colour, highly stratified, and intersected

by quartz veins. The dip is to the N. E., inclined to the horizon at an angle of 10° or 15°. I at first supposed the rocks were limestone, like what are found in the Ludak Pass from Soongnum, and in that of the Chinese frontier to Bekhur; but on applying the muriatic acid no effervescence occurred.

The descent from the Pass for half a mile was at an angle of 33° upon gravel and snow, with a sharp-pointed rock occasionally running through it; and to avoid coming in contact with them, each of us took the path agreeable to his own ideas of security, some sliding down the snow-bed with dreadful velocity. The person who rolled the perambulator, thought this plan easy and expeditious, and placing the wheel in front, took his seat upon the inclined plane of snow, grasping it with both hands. He descended at first with a steady, brisk motion, and the wheel kept rolling; but losing balance, was soon in a position of a very different nature. He went head foremost for some time, and then head and heels alternately with vast despatch, darting past the pro-

jecting edges of hard rocks. He was brought up in time to avoid being bruised beyond help, and neither he nor the perambulator were injured. Here ended the steep part of the road: hence we proceeded for one mile and a half on an easy slope of snow, but travelling was made laborious from our sinking one and a half to two feet. It snowed furiously all the way, and I actually thought at every step that I should leave a foot in the snow; my hands had passed through the stages of torpor and freeezing several times, and that reaction of returning warmth which you know is worse than the contact of solid ice. I was glad when we reached some rocks, on which I sat down, and rubbed my feet with a blanket.

On our right the snow, often of a reddish colour,* appeared in banks of an enormous thickness. Having by its weight separated from its parent hold, it formed perpendicular cliffs, which

* The snow was probably soiled from the corroded surfaces of the rocks: this is always the case, unless upon the highest summits, where nothing approaches; but I have never observed it of a reddish hue.—J. G. G.

although too remote to disturb us, yet filled us with apprehension. On our left, the mountains were less precipitous, and afforded a better resting-place to the snow. For one mile and a half we travelled over heaps of loose stones, snow, and slush at the point of congelation, sinking up to the knee. We passed by several deep-blue lakes, with banks of solid snow, and in every probability their bottom crusted with perpetual ice.* These are always to be dreaded; and we made a circuit to clear them, choosing rather a path more dangerous to view, than risking our silent, but certain end. Two avalanches descended just opposite to

* As those lakes are formed in the mass of snow, we cannot but suppose them below their margin lined with a glacier, the more especially when we consider the severity of climate at those elevated regions; but we cannot so readily illustrate the opinion of Professor Leslie, that the bottom of the Lake of Geneva, (600 fathoms deep) may be of a similar nature. After discussing the subject of the decrement of temperature, in descending through a body of water, he says, "I am hence strongly inclined to believe that the bottoms of those profound lakes are always on the verge of freezing, or perhaps somewhat below it; nor is it impossible but the beds of such vast collections of fresh water are incrusted with banks of perpetual ice, a sort of subaqueous glacier."—J. G. G.

us, one of rock, which spent its force in distance, the smaller pieces just reaching us; the other of snow, but arrested and ruined by intervening rocks. Soon after leaving the snow, we came upon the banks of the Nungaltee stream, which has a spread of a quarter of a mile in several channels. On our right were perpendicular crags of blue and marled rock, the beauty of which weakened the effect of their ruggedness; on the left were grassy knolls like artificial mounds of 500 or 600 feet high, and behind them were towering cliffs, whose decayed sides threatened to lay waste every thing at their feet. After fording the Nungaltee, we met with thyme and turf; and further on, with juniper, mint, sage, and a variety of odoriferous flowers. We crossed four considerable streams, rising at the back of the Kylas, (which, either joining the Nungaltee, or seeking other courses, at length mingle their waters with the Teedoong,) and encamped at Keookoochee (an enclosure for cattle), where are a few yaks of the cross breed, called Zo. By the stream of the Nungaltee, which is very rapid and unfordable, the barometer

was 19.138, indicating an elevation of 12,500 feet. In the vicinity of the camp, there were plenty of juniper and other bushes; but no birches, although across the stream they rose 400 or 500 feet above us. We passed four Tartars driving a flock of sheep, loaded with salt, to Chitkool. They had been detained two days at the upper extremity of the bushes, by the rain, and would not attempt to cross till it cleared up. This was a good day's journey; the perambulator gave ten miles, and together with the *long* slide, which neither it nor the man who accompanied it, gave any accounts of, and difficult parts of the road, the distance would be nearly eleven miles.

With the exception of the chronometer and some of the instruments, the baggage did not come up till dusk. I arrived at 5 h. 30 m. P. M. We had slight showers of rain the whole way, which still continued to the utter misery of the loaded people, three of whom had given way to their misfortunes, and unable to summon courage to bear their burden longer, stopped at the Pass, evidently to get sooner relieved from all trouble;

one of them, perhaps more impatient than the others, sat down upon the snow. People who had suffered less were despatched to their assistance; but it required more solid terms than those of mere friendship for their associates, to make them undertake the trip under such pressing circumstances. They met one of the stragglers in better condition than was reported, descending slowly, having left his load in the snow. The other two were found in the Pass at dusk, sitting behind a rock uncovered, they having torn up their blankets to save their feet, which were very sore; they passed the night at that elevated spot; but fortunately it did not snow, while the clouds prevented the descent of severe frost, or they certainly would never have survived the night.

On the 10th, at 1 h. 30 m. P. M., I marched to Koono, a small Tartar village of three houses, distance three miles and three quarters, half of which was along the left bank of the Nungaltee to its junction with the Teedoong. Amongst the usual productions of the country was the species

of juniper, named Shoor: it grows from 15 to 20 feet high. The dell was here inbound by white granite with a mural cliff; the stream was furiously rapid, and suspended in mixture a great deal of fine white sand raised from its bed. We crossed it by a slender Sango, 15 feet long within the margin. The noise of large stones carried down by the force of the water, was incessant; and mingling with the roar of the stream, produced an effect, which however fine to feel, we were glad to part with as fast as possible. At the Sango, the barometer gave 19.917, temperature of the open air $61\frac{1}{2}$, and that of the stream 49°. We travelled up the course of the Teedong for $1\frac{1}{4}$ miles, where it divides; the largest body of water, retaining the name of the river, flows from E. S. E. Upon its banks, two miles above this point, is the Tartar village of Charung, which can scarcely be under 12,000 feet. The other fork comes from the N. E. and leads us to Koono. Gooseberry-bushes and juniper were plentiful; and near the village fine-looking fields of barley and phapur, at an elevation of

eleven thousand seven hundred feet (11,700); the barometer at the camp being 19.600.

The mountains in this neighbourhood are all of blue slate, steep, and naked to near their tops, which, to the east, tower in sharp detached groups at about 18,000 feet high. They exhibit decay and barrenness in frightful forms; no vegetation even approaches their feet, while their elevated summits offer no rest to the snow. I could get no accounts of a road from this to Nisung, Dabling, or Shipke; but there is one up the course of the other branch (Teedoong), four days' journey to Stango, from which place Bekhur and Neilung are each about $1\frac{1}{2}$ stages distant. This road lies in the bed of the river, and is only travelled in the cold months, when it is frozen over. The Pass is similar to that from Chitkool to Neilung, having on its approach a tract of high table land, buried in eternal snow, which occupies a whole day's journey. I here met an old friend, who was very useful in communicating my wants and wishes to the Tartars, since I could with difficulty understand a word of their language.

On the 11th, I proceeded to Thungee, a tire-

some day's journey of 11½ miles. The road along the bank of the Teedong, for ten miles, was bad; for besides crossing it six times by Sangos, we had to pick our way upon smooth surfaces of granite, sloping to the raging torrent, and as often winding amongst huge masses of rock, projecting far from the bed, and forming capacious caves, in some of which sixty people might dine with freedom. For eight miles, the country was uniformly bare and rugged, with a cliff-front on either hand, at an elevation from 55° to 60° impending upon the stream, without trees or verdure, except some arid juniper, gooseberries, and mountain-ash. Precipices of 500 and 600 feet were knobbed with granite and a blue stone, and here and there a bank of clay and rubble. In some parts of the road there were flights of steps, in others framework of rude stair-cases, opening to a gulf below, and embracing ruin from above. In one place is a construction, still more dreadful to behold: it is called a Rapeea, and is made with great difficulty and danger. I never saw anything of the kind to such an extent. It consisted of six posts driven horizontally into the clefts of

the rocks, about 20 feet distant from each other, and secured by wedges: upon this giddy groundwork, a staircase of fir spars was formed, of the rudest nature; twigs and slabs of stone connected them together just as in the Sangos. There was no bar or support of any kind on the precipice side, which was deep and perpendicular to the Teedoong, a perfect torrent. After surmounting this dreaded part of the road, we came to another, the recent doings of the river; but from previous intimation of it there had been time to construct two Sangos, which brought us and the baggage in safety to our line of route. For six or seven miles, the fall of the stream is 300 feet a mile, and in some places nearly double, where it presents an entire sheet of foam and spray, thrown up and showered upon the surrounding rocks with loud concussion, which is re-echoed from bank to bank with a noise like thunder. The road hence to the camp was better; and I once more enjoyed the shade of fine forests of Deodar and Newsa.*

My friend who was so useful to me at the

* Newsa or Neoza. Pinus Gerardiana. It is supposed to be identical with the Chilghoza mentioned by Elphinstone. The seeds form an article of food, like those of the European

Tartar village of Koono accompanied me to-day, and amongst many subjects of conversation, he mentioned that the report of two or three gentlemen being encamped in the Boorendo Pass spread like lightning throughout Koonawur. The Chinese, on learning it, were instantly in agitation, and people from Chubrung and Thooling had assembled at Bekhur to stop us. "The latest accounts," he said, "stated that there were upwards of 200 people at Bekhur, who were disposed to allow us to reach the village, but not a step beyond it."

No cultivation was passed to-day further than what was attached to the residence of a Gelong or Monk, called Lumbur; these were a few fields of wheat, barley, turnips, peas, and beans.

Thungee has two divisions, Gramung and Henrung, a quarter of a mile distant, and between them is a Lama's place of worship. I encamped

Pinus pinea and Pinus Cembra, the Japanese Gingko, and the Californian Pinus Lambertiana. Vide Royle's Illust. Bot. Himal. Mountains, p. 352. "The commonest trees in the mountains are pines of different kinds, one of which, the Jelgoozeh, is remarkable for cones larger than artichokes, and containing seeds resembling pistachio nuts."—Elphinstone's Caubul, vol. i. p. 193.

at the former, which is pleasantly perched upon a southern hill slope, the houses rising over each other with the inclination of the soil. There are few fields here; but they are thriving. The grains are wheat, barley, phapur, ooa, and cheenee,* with some patches of turnips and peas; the whole neatly laid out and intersected by aqueducts, whose banks are adorned with walnut, apricot, apple, and poplar trees. The apricot crop was destroyed by a severe frost, which occurred when they were in blossom; but the apples and walnuts promise abundance. The houses are well built and roofed with birch bark and earth. Each has a durchut, or pole, with a flag of white cloth, inscribed with the sacred sentence, "Oom Mane paee me Oom," surmounted by a black chouree (cow's-tail.)† There is a Gelong and five Nuns

* Cheenee. Panicum miliaceum.

† Mr. Moorcroft makes a similar observation; and together with Captain Turner's remarks on the whirligigs and numerous other objects detailed in his interesting work, we may at once assign a common character, costume, language, and religion, to the whole country from the confines of Ludak, at least to the débouchure of the Brahmapootur. Mr. Moorcroft, in speaking of the temple of *Narayan* at Daba, says, "The parapet of this building was adorned with masses of black hair, formed, I believe, of the tails of the

here, all habited in red cloth. The Nuns were shy, and would not allow me to approach them; nevertheless, they stared at me all day from the balconies of their retreat. There are thousands of Manes and Chostins in this vicinity, and several sacred Cylinders. The hills here are all blue slate, which runs in horizontal plates, pretty much sloped, and produce thick woods of Newsa pine.

On the 12th, (to-day,) I reached Murung, distance six miles, two-thirds of which was new ground of easy access, and now and then of a moderate roughness. I was at my camp by half-past eight o'clock; here I found all the grain cut, the apricots ripe, and in luxuriant perfection.

I shall halt here to-morrow, and the day after, and perhaps longer, as I am anxious to find the rate of the chronometer; I shall then proceed to Bekhur; and if the weather is favourable, I may fix the transit in the Pass above this.

Camp Murung, July 12, 1821.

Chowree cow (Soora) reversed, plaited and intermixed with pieces of some shining substance, and having on their tops iron tridents."—J. G. G.

CHAPTER VI.

TOUR IN THE HIMALAYA.

Journey fram Murung to Nisung: proceed in the dell of the Taglakhar: ascent of Rothingee Pass 14,638 *feet: singular appearance of the country and its productions: rise of the valley: astonishing altitude of birch-trees: encamp at Zongchen* 14,700 *feet.*

My last letter to you was dated the 12th July, from Murung, a considerable village in the dell of the Sutluj, where I was detained a few days longer, in collecting supplies, and arranging for the trip to Bekhur. Murung, although eight thousand five hundred feet (8500) above the sea, enjoys a milder climate than we could expect from such an elevation. During the eight days I was encamped there the thermometer in the open air

ranged from 58° to 82° the extremes, and the flies were unusually troublesome. Most part of the grain was cut, and the apricots were ripe and of delicious flavour. On account of the high hills by which the village is environed, sunshine, even at this season, (midsummer,) is limited to nine or ten hours, scarcely reaching us before eight o'clock, and retiring behind the heights by five P. M. I had not a single clear day; but alternate clouds, sky, and sunshine, and now and then some rain, which is always light in these regions. The Ruldung cluster, (Kylas Peaks,) twenty-one thousand feet high (21,000), which occupy the area between the Buspa, Teedoong, and Sutluj, and are prolonged south easterly towards Neilung and the Ganges (Jannubee), were, as usual in clearer weather, involved in clouds, and I did not get a sight of them. Being thus unavoidably delayed, I had an opportunity of setting the Transit; but the unfavourable state of the weather prevented me making so many observations as I wished: the few, however, were very satisfactory, and showed that the chronometer had been going

well. On the 16th, supplies for ten days were collected, and I intended to have moved my camp the following day; but hearing of a Lama, who was conversant in Hindostanee, and could write the Tartar language, and under the expectation of being stopped by the Chinese at Bekhur, I thought it judicious to make use of his talents in communicating to the Garpan, or Governor of Garoo, by letter, my wish to pass the frontier, and tender my respects to his authority. I sent for him, and on the 18th we conversed together upon the subject. He proved himself intelligent and completely familiar with three languages, viz. Hindee, Tartar, and Koonawuree; he could also write the Nagree, Tankree, and the Tartar characters, Oome and Ochen, carve upon stone, and make wooden blocks for printing sacred sentences. He was acquainted with the complaisance exacted by the Chinese in their correspondence, and had been in the habit of writing to them on the part of the Bussahir Raja.

In the course of conversation, he told me significantly that H. and P. marred their hopes, by

sending to Garoo so adverse a token of friendship as a sword. This, being received as a challenge to fight, was returned; and with it the sentiments of the Chinese so impressively designed on the hieroglyphical painting, which all at Soobathoo saw; and further, the material omission of a silk scarf to accompany the present, agreeably to the usage of the country, was a quite sufficient reason for not accepting it, had it been the finest specimen of British ingenuity.

By the Lama's advice I had three letters prepared: one to the Garpan of Garoo, another to the Zongpoon* of Chubrung, and the third to the Chinese officer of Murmokh, the district containing Bekhur: they were written upon European paper, and signified complimentary expressions, friendly intentions, my hopes of an interview at Chubrung or Garoo, and of being permitted to visit the celebrated and sacred lake of Mansaro-

* This is evidently the same title as occurs in Turner, who makes it Soompoon, the commandant of the Castle at Tassusidon (any port or castle, and keeper of warlike stores.)—J. G. G.

wur. Each of the letters was folded in a khuttuk or silk scarf, with the upper cover sealed all round. The khuttuks to the Garpan and Zongpoon cost three rupees each, and that to the officer at Murmokh eight annas; the two first personages were addressed Rimboche, which is one of their titles.* Some pyramids of sugar, a few almonds and dates in cloth bags sealed and directed, accompanied the letters, agreeably to the established custom. They were ready on the 19th, and on the following day I marched to Nisung, distant eight and a half miles.

We halted at a small spring for refreshment, and it is the only one offered by the arid rocks: in this weary encounter Nature seems to have made an extraordinary exertion to accommodate the traveller to her frowns, which menace him to the verge of the boundary of perpetual congelation. We had only come two miles, but

* Here also we recognise the same character of people in places fourteen geographical degrees apart: Lama Rimbochay; high Pontiff, Chief Priest; Pungin Rimbochay, great Apostolic Master, the mitred professors of religion. Gelong, Monks; Anee, Nuns,—Turner, p. 325.—J. G. G.

we were already at a height of 11,350 feet. At this spot the juniper and gooseberries first appear, and the soil fed by the spring produces flowery verdure. From this, Murung had a depression of 25°, but the angle of ascent is often 30°. The few trees which vegetate on this inimical soil, are Deodar and Newsa: they are ill-grown, and shrink and disappear 500 feet below this; but a few birches, scarce deserving of the name, reach an absolute elevation of 12,000 feet. While I rested here the two Ruldung (Kylas) Peaks burst through the clouds: one was rocky, the other a vast dome of snow: their sides were wrapped in a dense line of cloud, and at their feet the richest vineyards flourished. Hence to the top of the ridge by the old line, the only road upon the hill face, the juniper and thyme were in bloom, and highly fragrant. At the crest, which is 13,000 feet above the sea, I found herds of yaks feeding. At this point the traveller is recreated by a more level and softer surface to tread upon, and is considerably relieved by the pleasure he derives in looking down upon the abyss, and the extent of

his toils; but he still ascends, more gently, it is true, yet under little diminution of labour, till he arrives at the greatest elevation of the road, which, you will recollect, was determined in 1818 at thirteen thousand seven hundred and thirty nine feet (13,739) above the sea. The barometer now showing 18.291, temperature of the mercury 62°, and of the air 56°, will give nearly the same as before.

The rocks are all clay-slate, inclining to the eastward at an angle of 30° or 40°; not a patch of snow lay within reach, or was visible near us: the line of snow-beds upon the mountains beyond the Sutluj (5 or 6 miles distant), had an elevation of 3° or 4°. In descending to Nisung I met a flock of goats and sheep laden with salt from Bekhur, tended by three Koonawurees, who said that the Chinese had assembled in force about two miles on the hither side of Bekhur, and had thoughts of advancing to Keoobrung Pass to meet me.

The rocks near this are of dark blue slate, laminated, and easily worked for the inscription of the mystic sentence "Oom Mane paee me Oom."

Nisung is elevated above 10,000 feet from the sea, and in summer possesses an agreeable climate: the thermometer at sunrise was 54° and the maximum of the day 75°. The tenants are Tartars, who are the slaves to superstition. Each house has its Durchut, or pole and flag, on which are neatly printed mystic words in different colours, each alternating with the other. A black yak's tail is always fastened above the flag: cylinders, as before described, are frequently attached to the pole, and are constructed so as to revolve by the action of the wind, a very convenient agency for mitigating the more rigorous exercise of manual devotion. In the vicinity are many tumuli, consecrated to the Deotas, by sprigs of juniper, pieces of quartz, or rags, to which travellers add their offering. I remarked a custom here similar to that of the Scotch farmers, who, on commencing harvest, plait some of the first cut stalks of corn, and fix them over the chimney-piece till next harvest. The Tartars fasten three stalks of barley over the outside of the door, the ear hanging down: every door in the village was thus orna-

mented. Several kinds of head-dresses are worn here: the women are bare-headed, the hair flowing loose about their shoulders: some of the men wear the common Bussahir cap;* others, caps similarly shaped, but of red blanket; a few have hats like our own, but with a narrower rim; they are of yellow cloth, fringed with red worsted thread, diverging in radii from the crown, and hanging loose all round: this last form of cap is very neat.†

There is a considerable extent of cultivation surrounding the village; the crops are chiefly barley, phapur, and ooa, and have a promising appearance. The mountains in this vicinity are subject to the same law of formation as those of other valleys in the Himalaya. On the Nisung side of the Tagla stream, which rises in the Passes

* A description of this cap will be found in Fraser's work.

† A cap similar to this, but peaked like a trident, was certainly observed amongst the Chinese at Shipke in 1818; and this fugitive idea is further strengthened by Mr. Moorcroft's mention of the trident in addition to the Masonic Insignia.—J. G. G.

to Tartary, their faces are softer, gravelly, and nourish a thin scantling of forest pines. In the clefts and ravines the snow descends very low, being precipitated from the steeper portions, and becoming perpetual from its mass. Across the stream, and with a south-west aspect, the mountains are rugged beyond conception, sterile, and horrid to view; and when a person is approaching the frontier by this (the left) bank of the Sutluj, their appearance has a wonderful effect upon the untried adventurer. In the evening (20th July) two Gelongs or monks paid me a visit: they were clad in red blankets; one wore a red-peaked cap, the other a hat of English form, of a lightish gray colour,* and a broad rim like a Quaker's. They chanted a melancholy strain, and marked time with a tambourine, adorned with pieces of silk of many colours. One of the Gelongs had a human thigh-bone pierced with two holes, through which he blew, and it sounded like the sacred shell of

* Mr. Moorcroft, in speaking of the painted houses of Daba and Tirtappooree, remarks their having a margin of a French gray colour.—J. G. G.

the Hindoos. With the exception of the Gelongs, I found nobody but old women and children, all the adults having gone to Garoo for salt and wool.

On the 21st of July, I made a journey of six miles and a half to a resting-place for travellers, named Oorcha. Three youths, from twelve to sixteen years old, accompanied me as guides: they had handsome prepossessing countenances of the Tartar feature. I had difficulty in explaining myself to them at the outset of the march, but having copied a few words from my vocabulary into my route-book, and by the aid of an intelligent lad who anticipated my meaning, I was pretty successful. The road to-day offered no variety, neither was it of that description which interests by its difficulties. The narrow dell of a rapid stream was confined within ridges capped by eternal snow, but so precipitous, that the field of vision was limited at a few thousand feet above us. Many tumuli or manes occurred, the inscriptions beautifully executed. You know that there is always a path on each side of them, and the

Tartars invariably pass them on their right hand: an observance, which, as well as I remember, Turner accounts for to prevent the words being traced backwards. This is certainly a mistake, since the writing is from left to right, the same as ours. Part of the road was level, and exhibited the usual scanty variety of the productions of the interior: the thyme, a prickly bush called Keechoo, the Pama or creeping juniper, and abundance of Shookpa, or the species that grows to twenty feet high. The inclined stratification of the rocks formed a severe footing, and our shoes were frequently pierced by their sharp angles, particularly on the descent to the Pangrung, a stream of some size, which we crossed by a crazy sango of two thin spars, the slates on them being rendered slippery by a raging spray. Three quarters of a mile further we crossed the Tagla, which at this season is a large body of water; the bridge of trees planked over, afforded a firmer step than most of the kind. The stream was thirty-eight feet broad, muddy, and highly agitated by masses of rock projecting in its bed; but the fall on this

point of its course is considerably less than that of the Teedoong. Hence to camp was two miles of rude and heavy footing, our road frequently rising 300 feet, and skirting along the rugged faces of the rocks, a furious stream below, and frail cliffs threatening us from above; again descending, and tardily picking our steps upon a loose declivity washed by the river. A portion of the road was formed by sharp-pointed slates, another on rubble, like the lower stratum of a turnpike road. Inclined planes of rock where the foot had no security, and insulated fragments of a very ancient date, were to be climbed over; and now and then we passed by the dark avenues, which they formed in their fall: such was the general nature of the route for two days' journey. Trees of every sort shrink from the arid air of Tartary, not on account of the elevation of the soil, for here we were much below the limit of forest belt. A few dwarf deodars appeared for the last time, but the birches still find a favourable climate, and even pass the frontier, and thrive in groups on the Tartaric side.*

* A clump of birches was observed upon the banks of a

The rocks here are frittering away by decay, the frost every successive year leaving them more naked. Soil is not formed here as upon the moistened sides of the Himalayan ridge: scarcely a stream is derived from the body of the rock; and those fed by the snow are scantily supplied from the summits of the mountains, where only it rests, although at enormous elevations.

I reached Oorcha at 12 h. 45 m. P. M., but the baggage did not come up till past three; the barometer stood at 20.001, which is equal to eleven thousand (11,000) feet. It was generally cloudy, but at five o'clock it cleared for a short time, and the thermometer in the tent rose to 99°, while the temperature of the air was 79½, a considerable heat for so great an elevation. But such is the nature of the Intra-Himalayan regions, while again the winter season is proportionably intense,

stream which ran east-north-east to the Sutluj, or in the opposite direction of those from the Indian side, the snowy chain being then on my south-west, and the table-land in front. The barometer at camp was 18.180, and at the upper limit of the birches close to it 18.080, answering to an elevation of about 14,000 feet.—J. G. G.

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on account of the short duration of sun-shine; so that the cause of the great solar reverberation also produces the severe cold.

On the 22nd of July, the thermometer at sun-rise being 55°, we proceeded to Rukor, a resting-place for travellers, distant six miles and three quarters—road as before, but less rude, and more dangerous. In some parts, where the stream has formed a margin of soil and loose gravel, the footing is very insecure. The only considerable accessions which it derives, before the dell contracts and separates, or, we should say, the only diminution it suffers,—is by the Khatee Choo, rising, on the Himalaya, south, and descending through a gap of some expanse, over which the stream scatters itself; and the angle of descent being very great, it is ruffled into foam. Along its course, which is soon lost behind the mountains, a lofty snowy peak rises into view: it is the only one yet observed on either side of the dell. In tracing with the eye the flexuous passages of these mountain-streams, one feels an irresistible desire of following them to their hidden sources,

and there to look upon the revolutions of matter, unapproached by man, or living thing. Two miles and a quarter from camp, we crossed the Tagla to its left bank, by a sango like the former, thirty-seven feet within the margin of the stream. The bottom of the valley is here about 12,000 feet above the sea: a little further on the dell is shut up, or rather is turned at a very great angle towards the east, to the table-land; and a fork named Rothingee, with a small supply of water, runs from the south-west. By this our route lay, ascending remarkably steep, but only preserving our level with the stream, which frets in a narrow channel and leaps from rock to rock. We tracked its course scarcely a mile above its confluence with the Tagla, and we were already at an elevation of thirteen thousand five hundred feet (13,500); and on this level we crossed it by a prodigious arch of snow, thickly covered with soil and stones, accumulated by the decay of the impending cliffs, which are a most dejecting spectacle to the cowering traveller, who beholds them from the inbound gulf as he stands upon the frozen vault.

The ascent which brings us out of the abyss to the Pass, also named Rothingee, is one mile, at an angle from top to bottom of 43°; but the actual inclination of the road was reduced by its windings to 30° or 35. The sun was perpendicular to us, and, darting fiercely upon the barren rocks, reverberated a glow quite oppressive.

The barometer in the crest was 17.856, the temperature of the mercury 80°, that of the air 63½, which indicates an altitude of 14,638 feet. From this spot I could trace the dell of the Rothingee, in the direction of south, 20° east: it is of the same nature as all the others. The mountain-face we ascended is a south-west exposure, which we may now venture to assign as the cause of its steepness. The opposite (or left) bank is a verdant acclivity, sloping gradually to the line of congelation; above which, rise hoary summits of incredible height and grandeur, with extensive valleys between them, loaded by prodigious bodies of undissolving snow. We descended but little from the Pass, one mile to Rukor. This is a green level spot, with a stone

enclosure for the goatherds and their flocks, who frequent this route. The entire elevation is about 14,000 feet, the barometer varying from 18.155 to 18.220; neither is this Alpine zone, which in equatorial America only produces a thin vegetation of grass, abandoned to frost and bare rock; for we have here pasturage for cattle, beds of Pama, Juniper, Keechoo, and Tama: the latter is the prickly plant to which we gave the name of Tartaric furze, in 1818.* I had now an opportunity of seeing it in flower, and it exactly resembles that of the *Whin*, although the leaf is different. About 200 feet below this were a few birches.

The visible summits of the slope on which I had my camp, I reckoned from 1500 to 2000 feet higher, and these had not a patch of snow. Across the Tagla the mountains are astonishingly abrupt, and spire into slender cliffs, decayed by age, and crumbling into ruin, and soil, which occupies the more gentle declivities, and produces large beds of juniper and furze. The line of peaks seems

* Tama or Tartaric Furze. Genista versicolor.

about 18,000 feet, and the snow only finds a rest near the crests, and then in stripes. Towards the head of the valley, in a north-easterly direction, is seen a huge table-mountain loaded with snow, having an elevation of 24°. To the west-south-west, along the course of the Rothingee, are to be seen pure white masses of vast height, which, when illuminated by the retiring sun, sparkled with the lustre of a glacier.

It was 2 h. 30 m. P. M., when I reached camp, and at three the transit arrived; it was immediately put up, and gave me excellent observations for the time. I find this is by far the best plan, and the only one, when you do not reach your ground till afternoon, in which case it requires the latitude to be observed to a very great degree of nicety, to get the time to accord; but with the transit, operations are very simple. A pillar is erected in ten minutes, and the transit is fixed within a few minutes of the meridian, levelled and ready for observing half an hour after it arrives. By a short calculation, (for I have got tables which reduce the computation at least two-thirds) if I

get two proper stars, which one seldom fails to do in these serene regions, I can obtain the time and deviation of the telescope, and thence the variation of the needle. During my halt at Murung I had an excellent opportunity of comparing the results of the transit with those of equal altitudes, and the greatest difference was only once a quarter of a second. I saw stars of the fifth magnitude very clearly in the middle of the day!

On the 23rd of July the thermometer at sunrise was $40\frac{1}{2}°$. This day's journey brought us to Zongchen, a stage for travellers and their flocks, with an enclosure for the cattle, distant eight miles and a half. The road was pretty favourable, but continually undulated, and forming very acute angles with the recesses of the mountain: it wearied by its flexure and jagged surface, yet did not fatigue us. Some birches of considerable size, wonderful to record, were passed, on a level with the last camp, or 14,000 feet above the sea. At three miles and a quarter we came into the bed of the Tagla, and crossed it to the right bank, by a good sango of three spars; breadth twenty-

two feet, and temperature of the stream 43°; the barometer standing at 18.438, indicates an altitude of 13,700 feet; and the distance travelled from the last point of observation will give the average fall above 300 feet per mile. The road hence is in the contracted channel of the river, and is of the most rugged nature; and in addition to the asperities described at the commencement of this route, we had slender balconies of the most difficult access, and leaning over the stream. We were confined on each side by horrid-looking cliffs, at an elevation of 60°, and never less, frequently perpendicular; in some places the view opened out, and such a scene of chaos and sterile horror is beyond the limits of imagination to conceive. The snow itself, which would otherwise find a resting-place at those lofty regions, is denied it here: so sharp and rugged are the cliffs, and so naked and arid, that the heat of the sun stagnates in the clefts, and carries its influence to the summits. The rocks were of many colours, and dipped to the east-south-east, at an angle of 30°; scarcely a shrub or plant is to be seen. Having

travelled a mile and three quarters from the sango, we observed the stream passing under a large snow-bed; and a little higher up is another of immense size, with tumuli of stones and earth, fifty or sixty feet high. Those accumulations are eternal, although the line of perpetual snow, and that of congelation, is greatly more elevated. Two miles further on, over gravel and loose stones, fatiguing in the extreme, I met two Chinese with a flock of sheep and goats, laden with salt, on their way to Nisung. They were frank and well-disposed; and on my asking them if I would be permitted to reach Bekhur, they laughed heartily and said, "Oh no," making prohibitory signs at the same time. The latter part of the march was by the edge of the stream, which is shallow and slightly ruffled, and the banks are thick set forth with furze. This encampment is about 14,700 feet, the barometer showing 17.640.

The face of the country here suffers a sudden and remarkable change, to the amazement of the traveller, who is led by the state and complexion of nature in the Himalayan ridge, crossed from the

Indian side, to expect perpetual rigors, barrenness, and masses of ever-resting snow. About a mile below this, the peaked mountains are limited, the valley expands, and the traveller finds himself surrounded by a more connected land, whose surface is regularly sloped, and productive at vast heights: whole fields of loose gravelly soil, steeply inclined, are formed by the crumbling of the loftier regions. The Tagla, now pure as the snow from which it rises, had a greater spread, and was gently ruffled by pebbles of many colours: the banks were of gravel and soil richly clothed with Tartaric Whins; and along the margin of the stream was a slip of the greenest sward. The dell had an expanse of a bow-shot, from the limit of which the mountains rose in vast connected masses with a soft and swelling surface, and entered the region of perpetual snow at a height far beyond its equinoctial boundary. Ahead the dell was closed in by table-land, just patched with snow. The sun shone bright, and gave an agreeable warmth and liveliness to every thing around: we gazed in amazement upon the

scene. The rocks here are wholly limestone, of a variety of hues, and crumbling away at their surface, form a fine soil: much of it is beautifully marled, and close to Camp it is of blue, brown, pink, and many other shades, strangely aggregated, as if by the union of a number of small pieces, since you cannot get a fresh fracture of half an inch. In a north-east direction the mountains are gravelly, and contain clay; having a very little snow near their summits, which are fully 18,000 feet.

To the south, across, is the Langoorge Choo, a stream flowing from South 35° East, nearly twice the size of the Tagla, which it joins a short way below camp; the mountains are gravelly, and show a fine vegetation. Notwithstanding the altitude of this spot, we had many flies; and in the evening the Tartar boys came running in haste to say that there were three large deer of the species called Nean quite close, and that with assistance they thought they could secure one of them. All my people, about sixty-five in number, went out, and were fortunate enough in forcing one to seek shelter in a narrow ravine,

where they killed him with stones and sticks; the flesh was good, and tasted like that of the Ghorul, so abundant in the hilly belt towards India.*

Camp, Zeenchin, July 26th, 1821.

* Ghoral. Antilope ghoral.

CHAPTER VII.

TOUR IN THE HIMALAYA.

Journey to Zamseeree: ascent of Keoobrung Pass 18,313 *feet: great difficulty of breathing: descend to Camp* 15,600 *feet: ascent of Hookeo* 15,786 *feet: wonderful height of sward: conference with the Chinese upon the Table-land on a plain studded with ammonites at the height of* 16,000 *feet: their peremptory refusal to allow the camp to proceed to the village: and consequently retrograde movement.*

ZONGCHEN CAMP, July 24, 1821.—Thermometer at sun-rise 39°. I marched to Zamseeree, distant 8½ miles, road along the edge of the Tagla, which is still a lively stream rippling over its pebbled bed, and well accords with the tranquil character of the country. The mountains sloping with a steep, but regular surface, spread

out into a flat covered with turf, 150 yards broad, through which the rivulet winds. The visible summits of the mountains from this (the right) bank have only an elevation of 15° or 20°; on the opposite side they show 30°, but are scarcely peaked, a few points now and then rising from the rest of the ranges; for several hundred fathoms down to their base is green and gay, with blooming tama; for $2\frac{3}{4}$ miles the dell is of this nature, and the traveller never ceases wondering at the face of the country, the lowest point of which is the expanded bed of a stream fringed with green sward at an elevation of 15,000 feet above the sea. Where the dell is shut up, the Tagla is joined by the Pelachoo, coming from the north at the back of a range of high land, which sends down its waters from its opposite face to the Sutluj; the Tagla, now a fretting rivulet, and its channel a gorge, makes a sharp turn south-easterly, by which the route lay; the furze was found here in highest bloom where nothing else could grow; the bleakest situations seem to be its favourite soil.

The hills on both sides are of gravel and marled limestone, and attain a height of 18,000 or 19,000 feet, but astonishing to say, are only tipped with snow. The Tagla was crossed twice upon arches of snow, and at $2\frac{3}{4}$ miles from its debouche into the dell, I got a view of the Keoobrung Pass at an elevation of 20° 28′. The barometer was now 16.092, temperature of the air 46°, or a height of seventeen thousand feet (17,000), yet I observed upon the range to the westward a kind of bushes at an altitude of 2′. Three quarters of a mile further, upon rubble, with a proportion of white marble, brought us to Keoobrung Pass; the ascent was more gentle than we generally find near the crest, but I experienced great difficulty of breathing and debility, but had no head-ache, although all my attendants suffered from the increased impetus of the circulation alluded to by Mr. Moorcroft. I was led to expect the Chinese here (rather too cold a spot for a piquet, and I doubt if their zealous vigilance would carry them so far) but was agreeably surprised to find nobody.

The view from this lofty situation was confined by clouds. In front to the east, the country looked arid and undulated, and continued for a great extent, beyond which was seen a lofty chain running N. 30° W. and S. 30° E. it extended from N. 45° E. to S. 68° E. when the prospect was intercepted by the nearer hills. This range seemed most elevated to the N. W., but the summits being hid in the clouds, prevented me making good observations; it was, however, perfectly white. South-easterly the line of snow was very close to the tops. I could only distinguish one prominent point loaded with snow bearing S. 85° E. at an altitude of 3′. To the N. W. I have no doubt the peaks would show a considerable elevation, but they were all buried in clouds. This chain must extend much further than I could see, and it is probable that it trends along the bank of the Indus, from Mansarowur to Leh of Ludak, or even to the limits of Kashmeer.

To the South, not far distant, there was a cluster of snowy peaks, the highest having an elevation of 46′, to the N. W. and W., the line

of snow was near the summits, and on the North across the Sutluj the snowy bases of enormous mountains were visible, but their crests shrouded in clouds. There was a little snow on each side of the Pass, but none on the ridge, which is above 18,000 feet. I put up both the barometers, Dollond's portable was 15.470, and the tube 15.455. A few ravens hovered above my head, and I heard the call of a bird which reminded me of that of the golden pheasant: the guides named it Kangmo. It began to snow, and a thick mist obscured every thing just as I had finished the barometrical observations; the thermometer, however, was so high as 44°, but the westerly wind blew strongly, and chilled us quite enough.

From the Pass to Zamseeree, distant two miles, was a very steep but easy descent to the Sheltee Choo, running from the south by several streams in a bed of 100 yards broad. To-day's march occupied $7\frac{1}{2}$ hours. I reached Camp at 3h. 30m. P. M. but a large proportion of the baggage only arrived at dusk. The barometer was here 17.060, which will give 15,600 feet, a height, by theory,

abandoned to indissoluble snow, whereas my tent was in a dell $\frac{1}{4}$ mile broad sloping to the Sheltee, and covered over with furze, and the plant we named broom, called by the Tartars khamda.*

I saw several flocks of pigeons, and many of the horns of the large deer before mentioned. I could not get the upper limit of furze on this (the Tartaric) side, but I reckon it fully 17,000 feet; it is the only kind of fire-wood, and partaking of the aridity of the soil and climate, it blazes like turpentine. How fortunate for the travellers who cross these bleak and frozen mountains to be so well accommodated! From the crest of Keoo-brung on either side it is less than four miles to the limit of bushes for fuel, whereas the Passes in the snowy chain seen from the plains of India, as the Shatool, and others, are nearly double that distance from any sort of arborescent production. Were it not for this provision of nature, these lofty Passes would only be encountered by the intrepidity of a few; the utmost limit of trees

* Khamda. Astragalus Webbianus?

upon the outer range of Himalaya is 13,000 feet, while here the lowest depression of the soil for many miles on each side of the Pass is far more elevated; but such is the constitution of this extraordinary country, that the Tartar tends his cattle and enjoys the comforts of his fire-side (not that of the climate,) at heights which under the equator itself are consigned to the rest of eternal snow.

JULY 25.—Thermometer at sun-rise 34°, marched to Zeenchin; a halting place for shepherds, distant $6\frac{3}{4}$ miles, road along the bank of the Sheltee Choo, which receives accessions in its course by two streams of equal size; where they unite, the dell is half a mile broad, and thickly clothed in furze and broom. There occur three kinds of prickly bushes resembling the whin, viz. tama, keechoo, and set.* The rocks have the same appearance, and are inclined South 75o

* Tama Keechoo, Set. "Genista versicolor, and Astragalus Moorcroftianus, spinosissimus, Webbianus and Gerardianus forming the different kinds of Tartaric Furze so frequently mentioned by travellers." Royle's Illust. Bot. Himal. Mount, p. 40.

West at an angle of 10°. A little further on, the valley opens at the junction of the Soomdo with the Sheltee; between the streams, is a stony plain half a mile broad, where are trees from fifteen to twenty feet high, called oomboo, which I suppose is the tamarisk of Mr. Moorcroft, the same kind being plentiful near Daba.*

The barometer was here 18.290; temperature of the mercury 74°, and that of the air 62°, or answering to an elevation of 13,500 feet. Our road was now directed by the Soomdo for half a mile, and thence to Hookéo Pass, by a rocky gorge, remarkably steep, and bound by mural cliffs of limestone. Upon the surrounding heights near the Pass are many shughars or piles of stones sacred to the gods, and which at a distance exactly resembled men; and the instant my people observed them, they said they were the Tartars waiting for me; I thought the same, as they had a very suspicious appearance from below, and I could not divest myself of the belief (although the guides assured

* Oomboo. Myricaria elegans?

me that they were shughars) till I looked through the glass.* Seeing clearly that the supposed Tartars were stones, I had now some hopes of reaching Bekhur, but was soon to be disappointed; for near the Pass I met three Koonawarees with a flock of sheep, laden with salt and wool, who said that the Chinese were quite close, and would not allow me to advance beyond their post. The crest is 15,786 feet, the barometer showing 17.080: it is the margin of the tableland, and how wonderful to behold, no rocky points now predominate. The soil is of a reddish gravel, and swells into gentle slopes, thickly covered with furze, very much resembling the Scotch Highlands, with furze in place of heather.

* By the by, the glass has suffered no injury from its being buried under the snow for nine months. I wish every thing else was recovered in as good order, but this cannot be expected. The large thermometer must have been broken by the same poisonous blast which carried away the portfolio and the life of the boy. This rainy season should disclose the body of the Brahmin who carried the bundle of sticks; he must lie on very elevated ground. I may take the Pass on my return, but it will be just at the same period of the year which proved so fatal and disastrous to you. Vide vol. 1, p. 313.

There were yaks, horses, and cattle, pasturing upon the contiguous heights, and three of the tenders watched me for some time at the distance of a quarter of a mile, till, I suppose, being convinced that I was an European, they mounted their horses and galloped off to give intimation of my approach. I was determined to get as far as possible, and told the guides to quicken their pace, and we moved on for one mile and a quarter upon the fine road, amongst blooming furze, and crossing a rivulet with a swampy bed, and banks of a peat substance, rose gently upon gravel studded with ammonites. We were now at the highest point of the road, the barometer 16.675, and descending 400 yards further arrived at Zeenchin.

I was walking on, when I observed on my right, about 200 yards distant, a dozen of Tartars, who called me and said, they had no order to allow me to proceed, and that I must encamp where I was, at the same time offering to send a courier to Chubrung, to solicit permission for me to go on; I instantly delivered the three letters to a person who seemed to have some authority, and

on his seeing the address, he ordered three horses to be saddled, and they were despatched without the least delay; he also sent off several horsemen in different directions to assemble the inhabitants of the neighbouring villages. Here I found a couple of black tents, and a Tartar picquet of about thirty people, who had been encamped three weeks, waiting my arrival, having heard of my approach when I was at Boorendo Pass: they had all horses, which were running about loose, grazing. The people were very civil and good-natured, but would not listen to any proposals for my visiting Bekhur, which I reckoned about two miles distant, in a N. E. direction. They are stout muscular men, with the Chinese features, all well and comfortably dressed in sooklat or thick woollen cloth; their outer garment reaches below the knees, and has long sleeves, trousers, and boots with a leather sole, the part answering to the stocking is of Tartan, and is tied with a garter: they are all bareheaded, the hair plaited into a long tail. Each had a knife, six or eight inches in length, with an ornamented brass or silver case,

a gungsa, or iron pipe, for smoking, and a mepcha, or steel, for striking fire. The pipe is of the shape of tobacco-pipes at home, but longer; it is of iron, frequently inlaid with silver, and has a silver bowl. The tents appeared comfortable: they were of black yak's hair made into a blanket, double poled, and round at the ends, from twenty to thirty feet long, ten broad, and six or seven high.

In the evening I received an answer from the Mookhea, or chief person of Murmokh, informing me that the letters had been forwarded to Garoo and Chubrung, and that he would call upon me next day. The Tartars were very curious and inquisitive, and surrounded the tent till ten at night, when they withdrew to their camp 300 yards distant.

JULY 26.—Thermometer at sun-rise was 27°, and a very heavy dew on the ground and bushes. I was awoke early by birds singing a note like that of the lark; I saw several crows, and some large birds soaring high in the air, which I took to be eagles, but they were called thungar, which

I believe is the kite. I observed a few locusts, and there were a considerable number of large flies. The Mookhea, attended by ten or twelve people on horseback, and a number of the inhabitants on foot, from the neighbouring villages, in all about 100, arrived at ten o'clock. The Mookhea, who is quite blind, seemed a very good sort of man, and talked much: he was polite in the extreme, and said he had no wish to be at variance with me, but that he was obedient to the dictates of higher authority, which prohibited any foreigner passing the frontier, and he was obliged to consider his own interest; but that an answer might be expected in ten or twelve days, and during that period I could either remain where I was, or return, as it suited my convenience. I was compelled to do the latter, as I had only four days' supplies, and the Bekhur people either could or would not furnish me with more than half a day's consumption of grain.

I was unfortunate in regard to weather, alternate sunshine and clouds during the day, and the thermometer in the open air never rose above

60°, the wind blew very strong from the south-west, it began at nine, attained its greatest force by three, and subsided at sunset. The barometer ranged from 16.668 to 16.744, which will give an elevation of about 16,200 feet. I was never before encamped so high, or saw so great an extent of country around me free of snow at so great an elevation. The soil about the tent was black and fertile, all covered with tama and metoh: the latter plant is more common here than the furze; it is bushy, without thorns, and bears a yellow flower. A small rill ran past the Camp upon luxuriant turf. Across and along the banks of the Sutluj, the mountain-ridges are peaked and rise precipitously, and eastward there is high land in masses, but no level, the rivers flowing in deep-worn channels. Beyond this tract, which is of great extent, there appears the lofty snowy chain, which was visible from Keoobrung Pass; from this spot it seemed to have a direction of North 40° West, and South 40° East, but the clouds always hung upon it, and I could not fix a single point.

I got the altitude of two peaks, one 27′ and the other 29′. After the Mookhea took leave of me, I had the rest of the day at my command. I got equal altitudes for the time, and in the evening admirable observations for the latitude, which will come out 31° 36′ nearly. At night it was quite clear, and in this pure atmosphere, the stars shone with a brilliancy scarcely to be conceived. The galaxy had a very grand appearance, and some of the stars in it could almost be counted. I sat outside the tent for an hour, gazing upon the scene; and next morning, although the temperature was below freezing, I could not resist the pleasure I contemplated, in seeing the moon and Jupiter before day-break, and which was amply realized in the dazzling splendour of the planet, long before sun-shine reached us; although we were in an open and insulated plain, far distant from the intercepting shade of the highest mountains, the clouds on the great snowy chain were illuminated by the sun, and assumed the most beautiful diversity of tints, surpassing in lustre the brightest gold.

July 27.—Thermometer at sun-rise, 30½°, heavy dew; commenced my return by a march to Zamseeree, six miles and three quarters.

Camp Zamseeree, July 27, 1821

CHAPTER VIII.

TOUR IN THE HIMALAYA.

Return to Reeshee Talam: ascend Gangthung Pass 18,295 *feet: danger from a shower of snow, dense clouds, and missing the way: descend by a rough road to Reeshee Eerpoo* 14,800 *feet: great height of cultivation; still descend to Dabling in the valley of the Sutluj, where the heat was very oppressive, rising to* 109° *in a tent, whilst the preceding day at noon it stood at* 33°. *Such is the extraordinary facility of modifying climate afforded by the mountains of Himalaya.*

JULY 28.—Thermometer at sun-rise 35°. I ascended Keoobrung, and encamped at Reeshee Talam, distance six miles and a quarter, a resting-place for travellers and their flocks on the bank of the Tagla, two miles up the dell from Zongchen, where I before stopped. I put up Dollond's

portable barometer at Keoobrung Pass, with a view to verify the former observations, and it marked 15.469 or one-thousandth part of an inch lower than before; this, to a fastidious critic, will appear a too nice agreement, but the observation was made at eleven o'clock: the former at two P. M. and if we allow for the difference of altitude of the mercurial column within that period, and also for the temperature of the air, which was 37°, the respective measurements will vary in a greater degree than could be supposed from the indications of the mercury. It snowed as I crossed, but cleared away before I reached the camp, which is 15,000 feet above the sea; the barometer showing 17.380. I put up the Transit and had excellent observations for the time, which I was anxious to ascertain correctly, as there occurred two immersions of Jupiter's satellites. I sat up for both, the first was at half-past eleven, but to my great disappointment I beheld Jupiter rise over the hills in sparkling beauty only two minutes after the eclipse had passed; this was the first satellite, and I had reckoned upon a sight of the planet

earlier; the other of the second satellite occurred at half-past one o'clock. Jupiter was bright till one, but became obscured by clouds before the time, and I lost this also, which was provoking enough.

JULY 29.—Thermometer at sunrise was 39°. Made a journey of ten and three quarters miles to Reeshee-Eerpoo, within the valley of the Sutluj, crossing the lofty ridge which separates it from the dell of the Tagla. This was an arduous and disagreeable march; it occupied eight and a half hours, exposed to rain and snow the whole time. We ascended from the bed of the Tagla upon the slope of the range, which was gently inclined for two miles, when the furze ceased to grow, and I here set up the barometer, which was 16.463, answering to a height of 16,700 feet: but across the Tagla on the east side, I think it was fully 500 feet higher. Before we arrived at this elevation it began to snow, and we were involved in a dense cloud, no path visible, and the guides, uncertain of the direction, would not go on; I was therefore obliged to make a halt of half an hour:

the clouds then cleared away, only for a minute, but disclosing in the interval a shughar, or pile of stones, near the Gangthung Pass, which bore N. 60° W.; it was instantly obscured; and with this direction, and the pocket compass in my hand, I led the way upon the flank of the range, ascending over loose masses of limestone and slate, which time and perpetual frost had exposed, never to be animated again by vegetable life. Now and then we had turf and fungous excrescences, and a few plants blighted in their growth. I had a long line of baggage, and to preserve it in the proper direction, required an effort that resembled the howl of wild beasts. Our situation was irksome, half frozen as we were by the contact of clouds charged with rimy vapour, and we were happy to see them disperse and discover the road; it continued snowing, but none lay on the ground.

At noon I reached the pile of stones which marked the Pass, where the barometer was 15.549, temperature of the air 35½°. We still ascended from this spot over perpetual snow, now sprinkled with a fresh covering, till we arrived at

the extreme elevation of the road where the barometer was 15.422, and the temperature of the air 33°, which will make the height of the Pass equal to the Keoobrung. From this (the spine of the range) streams flow to the Tagla and Sutluj; we now hurried down to a milder climate, for a short way upon continuous snow, and afterwards on loose rock and snow for a mile, where the head of the dell is formed on each side of us. In this plain of wrecks and horrid scenery, the detached summits of the chain rose in various misshapen forms, dark and naked on their sides, but terminating in spires and domes of perpetual whiteness. Around their bases, which here rest at an elevation of 17,000 feet, are enormous accumulations of snow, containing basins of still water, the dread of travellers who approach them: the scene surpasses description. The dell, nearly half a mile wide, is covered by layers of broken stones, exhibiting extraordinary variety, beautiful to the eye, but severe to the feet; the united streams and gatherings from the snow take the name of Hocho, which in some places spreads out

to 100 yards, and in one spot to 200 or 300, but so shallow as just to cover the pebbles of its bed: in other parts it is arched over by the snow, and then it is buried under ruins of cliffs, from which it again bursts out and expands over the plain. The fall is here very gentle, but below this it is precipitated in whitened agitation and unceasing roar, but the body of water is too insignificant to produce the full effect of the inclined plane over which it rolls, since this must frequently be nearly 1000 feet of perpendicular descent in a mile. From the snow of its source to the level the Sutluj is 10,000 feet, and the distance is less than twelve miles; the mountains on each side are high and precipitous, and their avalanches have at different times arrested the stream, which in two places is formed into deep lakes of considerable extent; the embankments of which being high, above the level of its natural bed, it dashes over them with a loud clamour. The last mile of the road was as rough as the surface of the stream, which was one broken sheet of foam. At 4. 30 P. M. I reached Reeshee-Eerpoo, the first spot that affords wood

for fuel; this was a truly galling day's journey, the snow changed to sleet and then to rain, and much of the baggage did not arrive till midnight. This route is little frequented, on account of the distance between wood for fuel on opposite sides of the Pass; and in bad weather travellers prefer making the circuit by Nisung or Shipke. My Camp was here about the height of 14,800 feet, the barometer showing 17.500. Vegetation in this glen is very poor; a few juniper bushes were observed.

JULY 30.—The Thermometer at sun-rise was $36\frac{1}{2}^{\circ}$, and a great deal of snow had fallen upon the surrounding peaks during the night. Marched to Dabling, distant $9\frac{1}{4}$ miles along the dell, with the Hocho on our left; met again with honeysuckle and gooseberries, and a soil covered with sage, thyme, and many odoriferous plants, all signs of a better climate than that we had lately visited, and $3\frac{1}{2}$ miles brought us to a summer residence of shepherds, and a few fields of barley, phapur, and turnips, which do not thrive well at such an altitude. This is the highest cultivation I have yet

noticed; the Barometer was 18.487, temperature of the air 56°, which will give an elevation of at least 13,300 feet. The dell, farther down, is arid and uninteresting; a few ill-grown trees now and then occur, and tufts of aromatic plants, but nothing verdant like the foliage of the glen of the Pabur; the mountains on each side are desolate without grandeur; untrodden ground has here no curiosity to excite, every step is wearisome till the road crosses the ridge, which confines the dell at an elevation of 11,300 feet. From this, the Sutluj, now at its fullest swell, is seen 3,000 feet perpendicularly below, muddy, and moving in silence. The opposite bank of the Sutluj presents a perpendicular section of 6 or 7,000 feet of pure rock. In a corner, and at a considerable elevation above the river is the village of Pooe, remarkable for the contrast which its green fields, vineyards, and apricot groves form with the barren cliffs, and by many would be hailed with delight and pleasant expectations, after a sojourn of ten days in tented wilds in the regions of perpetual congelation, with neither hamlet nor the trace of

industry in sight, yet, must I own that the elevated regions of Tartary, bleak and abandoned as they are, have many more charms for me. From the Pass we descended by a steep and difficult road, which at the end of $1\frac{1}{4}$ miles opened into the arable belt of land by the margin of the Sutluj, and a mile farther brought us to Dabling, a village of Koonawur, occupied by Tartars, with the houses surmounted by flags as at Nisung. At sun-set the missing people arrived, having passed the night a short way above my Camp of 14,800 feet; it rained during the whole march, and snowed thickly upon the heights, and I thought myself fortunate in having made the passage of the Gangthung, since the fresh snow must have rendered it both difficult and dangerous.

The three Tartar boys who accompanied me from Nisung, conducted themselves satisfactorily in every way, and made a very favourable impression in my mind of the character of the people. I gave them two rupees each, for which they were very thankful.

July 31.—I got equal altitudes for the time,

and put up the Transit. The chronometer appeared to have been going admirably; it gives my camp on the table-land near Bekhur 28 miles east of Murung, and $18\frac{1}{4}$ east of Dabling; the difference of longitude between Murung and Dabling is $10\frac{1}{4}$ miles, which added to the former, makes $28\frac{1}{2}$; had it been exact the results would have been the same, but the mean $28\frac{1}{4}$ miles is probably a very small deviation from the truth, and the difference of $\frac{1}{2}$ mile or two seconds of time is nothing in fourteen days, considering the extremes of temperature to which the watch was exposed, from 110° in all probability in the bed of Tagla (for it was 99° in the tent) to below the freezing point.

Dabling is about 9,400 feet above the sea; but such is the effect produced by the reverberation of the sun's rays in those secluded dells that simple elevation ceases to be indicated by the decrease of temperature. I found the heat here on the 31st, quite intolerable in a tent. The thermometer rose to 109°, and I was glad to seek shelter in a house, while scarcely twenty-four

hours preceding I had it 33° in regions of eternal snow, and was almost frozen up at noon-day. As I was in no hurry, I halted here yester-day and to-day, to observe some stars; to-morrow I shall proceed to Numgea, and the next day to Shipke, where I hope to receive an answer from Garoo, although I can scarcely expect it will be favourable. You will be glad to hear that Dol-lond still holds out: I had always used it, and compared it with the other, now and then. It is a trouble putting up the latter, since the plummet has disappeared. All the other instruments are still safe, and the spiders' webs of the Transit are as good as when first put in; the perambulator got out of order on the last march, but it is now efficient. By the mean of several observations Dollond stands .006 higher than the other tube. For the last two days the thermometer in the open air has ranged from 60° at sun-rise, to 85° in the middle of the day.

Camp Dabling, Aug. 2, 1821.

CHAPTER IX.

TOUR IN THE HIMALAYA.

Journey to Numgea; union of the Speetee River with the Sutluj; majestic scenery; horrid gulf of Oopsung; ascent to Peeming Pass 13,518 *feet above the sea; surprising contrast between Busahir and Chinese Tartary; stupendous appearance of Purgeool,* 22,500 *feet; descent to Shipke the first town in Tartary.*

My last letter to you was from Dabling, dated the 2nd of August, when I intended to have moved my Camp the following day to Numgea; but it rained, and as I had not recovered from the effects of the snow in the passage of the Ganthung, I was not very anxious to make an uncomfortable departure. Rain is more frequent in this climate than we might have expected from the oral

accounts of the inhabitants; but it is always light, the extreme dryness and rarity of the air is incapable of producing such dense precipitations as occur on the Indian side of the Himalaya at far greater heights. The clouds flit over the peaks in the form of a misty vapour, and roll down their flanks, dispersing into nothing; sometimes they invest the mountains like a broad belt above, while the white summits appear as insulated in the aëreal ocean. For days together they occupy the same position, and with a change of their specific gravity or that of the atmosphere, they shift their situation, moving off in groupes as if by agreement and under some impulse, which has an odd appearance to the traveller, and reminds him that he is under a foreign sky. Even when the air is overcast and rain falls, the stratum of clouds is frequently so loose that the sun's rays, by being concentrated in their passage through it, strike with the power of a lens.

During my halt here I heard many complaints of inconvenience and detriment from the want of a direct communication between the banks of the

Sutluj. The Namptoo Sango in this vicinity was broken down in 1819, by the decay of the rock that supported it; and the only intercourse between contiguous tracts of country of an hour's journey, is by a circuit of six or seven days. This is a matter worthy the attention of Government, and one in which a little British influence would have the happiest effects. The transit of Shawl-wool by this route is of itself a consideration worthy of support, and without which the present experimental arrangement for the supply of the market will be unfairly estimated. Without good roads, and a facility of access, no commercial or trading intercourse can be advantageously maintained.

At Dabling there are several Lamas of the sect called Neengma, something like the Soonasees of the Plains, clothed in red blankets; they were very regular in chanting their vespers, which are solemnized by an accompaniment of clear sounding cymbals, and a drum. They assembled in an adjoining room to the one I occupied, and the music was very agreeable.

On the 4th of August I removed my camp to Numgea, at a distance of eight miles, all along the margin of the Sutluj, which is more tranquil than we might expect from the savage aspect of the masses that form the dell in which it flows. The village of Doobling is passed through at the end of the first mile: it is situated upon a declivity, 1000 feet above the Sutluj, in a grove of apricot and walnut trees, and watered by a stream. The apricots form a part of the subsistence of the inhabitants, and at this season half of them are pulled and exposed to the sun upon the roofs of the houses: when dried they are not unlike our prunes. There are many of the usual tumuli, faced with inscriptions in this neighbourhood, but some of them most fancifully situated; for in order to pass them on the right hand the road makes a circuit of nearly a quarter of a mile. There are also numerous chostins, on which are painted figures of animals very neatly executed. Close to the path is a whirligig, or wooden cylinder, on a perpendicular axis, which is set in motion by passengers; each of the Tartars in company gave it

a twirl, and I did the same, repeating the sacred sentence " Oom Mane paee me Oom," with which they were much pleased.

There was little variety in this day's march; the road is partly in the bed of the Sutluj, where repose the aged ruins of avalanches, which bearing the marks of the stream, and corroded by long exposure to the air present a venerable record of the revolution of time; for they are covered with a mantle of verdure. The dell is very narrow, and the mountains are amazingly rugged, precipitous, and of an incredible height. In this deep-worn dell the Sutluj has only a gentle declivity, not above forty feet in a mile. Many brilliant minerals arrest the eye of the traveller as he picks his steps amongst the detached rocks.

But what particularly forces itself upon the imagination is the singular appearance of the cliffs. The predominating substance is of a blue colour, crossed in all directions by veins of white granite, most commonly traversing it in a serpentine course. The perpendicular form, and vast height of the cliffs, which are perfectly naked, exhibit

this astonishing structure, with an effect of which it is impossible to give a description. Some of the veins are not broader than half an inch, whilst others are five or six feet; there is no soil here, and very little gravel. On the right margin of the river the mass of rock is so very steep and fresh in colour as to give it the appearance of having been recently fractured; as if the mountains had parted asunder to give passage to the Sutluj. At the end of six miles, Khab, a village of two houses, suddenly bursts into view, when only 200 yards distant. It is circumscribed by loose fragments of rock, which offer no nourishment to vegetation: and the traveller is then struck with surprise at finding himself instantly amongst fields, vineyards, and avenues of apricot-trees. Granite is now the prevailing rock, and the sight of this noble formation was associated with lively feelings of early days; the mica-slate, which bears but a small proportion to the granite, is of a dazzling lustre, and shines like burnished bronze. We passed several temporary huts, high perched upon the crags across the river; they are the resi-

dence of the hunters of Hango, who at this season roam amongst the rocks in search of deer. The species that frequents these frowning ruins, is that which I noticed in a former letter: the male is called Nean or Skeeng, and the female Tadmo; the head is crowned with very thick short horns, which are used to adorn the exterior of the Deotas or places of worship.

Opposite to this, the Sutluj is joined by the Lee, or Speetee, one of its largest tributary streams, having its source in the Ludak country. The character of the gulf at the confluence is certainly one of the wonders of the world. The flanks of the passage are solid granite, stratified as before observed, and seem perfectly mural. For many hundred feet, one of the arms of the Purgeool limits the left side of the channel by a wall separated from the parent mass, and of the most dreadful appearance to the spectator, who views it from below. Such is the prodigious bulk of this impending wreck, that were it to give way, and this must occur at no distant period, the Sutluj will be arrested at this furious point of

its course, and a magnificent cataract record the event. There can be no doubt of the original continuity of the granite ridge of which the Lee has now made a complete section; but the time required for this must extend to an antediluvian period. The contrast between the two streams is striking; the Lee issues forth from its almost subterraneous concealment, in a calm, blue, deep body, to meet the Sutluj; but the salutation is scarcely received before it is grasped in the embrace of its impetuous consort.

A mile beyond this is Numgea, the last village of Busahir, containing eight houses, planted in the midst of desolation. Adjoining on the opposite bank of a small stream, are fields of barley, cheena, ooa, phapur, and turnips, some apricots, and a few grapes. The houses are built of granite, but their structure ill corresponds with the durability of the materials. The want of forests to supply the timbers necessary to give a support and union to the walls, as in all the other parts of the country, is the source of this misfortune; for the granite blocks resist their rude implements

of architecture.—The crops here are very backward, and it will not be harvest till a month hence. Elevation is not the agent here: 9300 feet is much inferior to other spots where the grain has ripened. It is the site and exposure that regulates the activity of the crops. The mountains on every hand are of a stupendous height, those immediately at the back of the village subtend an angle of 38° and exclude the sun till eight o'clock. The heat generated during the day, in so profound a glen, is great, but the very cause of this retards the developement of vegetation; since the long absence of the solar warmth is more than a counterbalance to its short and powerful ardour. The strata of the rocks that were visible, dip down the stream at an angle of 20°. Across the Sutluj is seen the village and temple of Tuzheegung, where a few Lamas reside at the height of 12,400 feet; and beyond it rises the colossal Purgeool, twenty-two thousand five hundred feet (22,500) high, with an elevation of 19°.

On the 5th of August I made a march to Shipke

distant nine miles; the nature of the road as far as the Pass to Tartary may be summed up in a few words. On the left hand, at a great depth below, is the Sutluj, tearing its way amongst masses of fallen rock, and appearing a white line of cataracts: the declivity is frightful to behold, of a loose jumble of stone and indurated gravel eaten away by frost and thawing snow. One sees winding passages with spiked ridges intervening, at which the eyes grow dim and the head dizzy. The pathway is the bare surface of the shattered rocks which are constantly changing their place. Before, is the abyss of the Oopsung; the rocks are grouped together, and menace the traveller with horror, and he expects to be annihilated at every step. The deep indentations formed by rushing torrents, must be followed into their darkest windings; and it is in such situations, when the footsteps are tardy and insecure, that the frail outline of the cliffs presses upon the imagination. Flights of steps are frequently met with in this march, and the most dazzling minerals occurring at every pace, lighten the toil and anticipated dangers of this

dreaded road. At the Peeming Pass, from which the road descends to Shipke, the barometer was 18.467, the temperature of the Mercury 74°, and that of the air 63°. This will give nearly the same height, as it was made from corresponding observations in 1818, or 13,510 feet.

This is the line of separation between Busahir and Chinese Tartary, and there could scarcely be a better-defined natural boundary. In front, the face of the country is entirely changed: as far as the eye can reach eastward, mountain-masses succeed each other: no rugged peaks rise into view, but a bare expanse of elevated land, without snow, in appearance like a Scotch heath. From this point the Sutluj had a depression of 42°, and the mighty Purgeool an elevation of 23° 23′; what an immense mass of rock it is! From the bed of the Sutluj to its summit is 13,500 feet, and the angle of the slope is not under 40°. The Sheerung Mountain, over the top of which the road leads to Garoo, had an altitude of 2° 50′; the actual height of this mass is probably not under 18,000 feet, yet only a very small stripe of snow

could be detected by the glass. From hence to Shipke was two and a quarter miles, by an excellent road upon the hill slope at an angle of 15°, on gravel and frangible red granite, like a good turnpike-road.

Camp Shipke, 5*th August*, 1821.

CHAPTER X.

TOUR IN THE HIMALAYA.

Description of Shipke: Letter of the Garpan, and positive refusal to allow me to advance: highest limit of cultivation; ascent of Kongma Pass 16,007 *feet; return to Numgea; cross the Sutluj; and ascend steeply to Nako village, elevated* 12,005 *feet above the level of the sea.*

Shipke is a populous town of several separate divisions, occupying the left bank of a rivulet rising in the perpetual snow, not 8 miles distant: the extent of cultivation surrounding the village is considerable, the crops are luxuriant; they are wheat, barley, ooa, phapur, and turnips, separated by rows of apricot-trees. Although fully 1,300 feet higher than Numgea, and ten thousand six hundred feet (10,600) above the sea, the crops

were further advanced, part of the grain was cut, and what remained was yellow. The situation and exposure of Shipke seems favourable for an early harvest; at this season of the year, sunshine falls on it before 6h. 30m. A. M. but it disappears at 5 P. M. which is sooner than at Numgea. The Sutluj flows past it at the distance of a mile; and across it to the North, from the water's edge rises up in hoary grandeur the mass of Purgeool, seen from this under an elevation of 23° 38′. To the East of it, and in the same granite range, are several sharp pinnacles, more than 20,000 feet in height, yet bare to their utmost extremity; and on the South West, at the back of the town, is a mass of 20,150 feet, crowned with eternal snow, seen at an angle of 27° 8′. From the lightness of the snow, in October, unchanged by the power of the sun, we beheld it drifting from the summit like smoke before the wind, and carried over our heads at the perpendicular distance of 2 miles, but none of it descended to the earth again. At this season, when the snow must feel the influence of the sun at the loftiest peaks, nothing of the kind occurs,

but I can never forget the effect it produced on my astonished eyes; such scenes cannot be impressed upon others by the medium of language.

The great autumnal feast held in consecration of harvest had just concluded on my arrival. I understand it is very gay, but I was only in time to see it breaking up; crowds of people were dancing, singing, and playing upon musical instruments, such as cymbals, drums, and double flageolets.* A similar ceremony is observed in China, but it occurs in the spring, although it is likely enough that there is also one for harvest-home. I regret my lack of fortune that prevented

* In Mr. Moorcroft's Narrative, we find mention of a Tartar tune that reminded him of the overture in Oscar and Malvina, which does very ample credit to their taste. Turner has somewhat reversed the comparison, but with equal praise, for after being entertained with several pleasing airs, with an accompaniment of the double flageolet and guitar, by the mother of the infant Teshoo Lama, (the regenerated spirit of the grand Lama,) he adds, "her voice was by no means inharmonious, and I am not ashamed to own, that the song she sung, was more pleasing to my ear than an Italian air!!" I also have heard Lama Music, and although I by no means subscribe to the opinion of the latter gentleman, yet I do own that there was a romantic melody in the air, quite delightful to the European ear.—J. G. G.

me enjoying this homely scene; since, from the character and moral feelings of the people, I am satisfied that my curiosity would have been amply rewarded.

The men are stout and well clothed, and in dress and appearance resemble those at Bekhur; they wear necklaces, on which are strung several large pieces of a substance like amber, called Poshil, beads of coral, and some that looked like rubies and emeralds; the females are also stout, and are covered from head to foot with ornaments; as large bracelets, and anklets of pewter or silver, and numerous chains hanging from their shoulders, strung with cowrie shells, and beads of pewter, brass, coral, and coloured glass.

About sunset the chief person of the place paid me a visit, and informed me, that orders had been received from Lahassa, some months ago, to make no friends of Europeans, and to furnish them neither with food nor firewood. When I was at dinner, it was intimated that a letter from the Garpan of the interior had just arrived; I ordered it to be brought, but the courier would only deliver

it in person; after dinner he made his appearance with the letter folded in a blanket tied to his back, and although he was three days from Bekhur, he had not unloosed it. I understand that where there is a regular horse post, as between Lahassa and Garoo, the orders are remarkably rigorous; the bundle is sealed fast to the rider, who is again sealed to his horse, and no inconvenience, however great, admits of his dismounting until he reaches the relief stage, where the seal is examined. The letter of the Garpan was accompanied by a Khuttuk, some Nerbissi, and a piece of China silk: he said that the Court of Oochang (Lahassa, Lassa) were very much alarmed on hearing that Mr. Moorcroft had penetrated to Ludak, and in consequence had directed him to give orders at all the frontier posts to prevent European gentlemen from passing the boundary, and if they entered the country unobserved, to stop them at the first village and afford no supplies. He concluded by saying that he was so completely under the authority of the Lama of Ouchang, that to hear was to obey, and in future he

could neither receive nor answer letters from Europeans; and must return them unopened. His letter was plain and brief, neatly written in the character called Oome, of which there is a specimen in Turner's Thibet, but the Tartars frequently make use of hieroglyphics and paintings to represent the subject, like the old Mexicans.

On the 6th of August, being still at Shipke, the thermometer at sunrise was 55°. Having no supplies for my camp, I returned to Numgea by the high road, distance ten and a quarter miles; a journey which occupied the greatest part of the day, on account of the vast height of the Pass, and steepness of the ascent to it. The perpendicular height above Shipke is one mile, and the attempt to accomplish it was strongly remonstrated against: this road is preferred for loaded sheep and goats, to avoid the intricacies of the lower pathway, already described; by this I sent the camp, and commenced the ascent at 7h, 45m. A. M. Shipke itself lies on the declivity which is continuous to the Sutluj. At the end of one and a half mile, we were already at an elevation of 11,900 feet,

where we found the summer residence of shepherds and their flocks, and some fields of wheat. This is the highest limit of cultivation in the neighbourhood of Shipke; the barometer gave 19.517, temperature of the mercury 78°, and that of the air 65°. For two miles the gravel was of red granite for the path, which was steep, but not rude for the feet; the last three quarters of a mile to Kongma Pass were very fatiguing, at an angle of 28° and 30° winding amongst tama bushes. In the crest, the barometer was 16.927, the temperature of the mercury 70°, and that of the air 55°, which will give a height of fully 15,800 feet. From this, the site of my camp at Shipke had a depression of 22° 13′, which, together with the distance deduced from the bearings of Purgeool and other peaks, gives the height of the Pass nearly 16,000 feet; this I think the barometer will indicate, when calculated from corresponding observations at Soobathoo. *

* This Pass has since been computed and comes out 16,007 feet.

Sheerung Mountain had an altitude of 1° 19′ * and the high Table-land to the eastward showed 54′. The usual shugars, or piles of stones, are ranged in the crest, and here are also several enclosures from two to three feet high; these occur in every stage where the road traverses elevated ground, unless there are natural caves in the rocks: they afford protection to the sheep and their keepers from the keen impetuosity of the westerly winds, which sweep along these bleak frost-bound tracts in the autumn and cold season; and towards that exposure, these pens are mostly raised. The fury and severity of these land winds is scarcely to be imagined, and the effects are

* If the distance is twenty geographical miles, which it appears to be, an elevation of 1° 19′, allowing 350 feet for the curvature of the earth, would indicate a height of three thousand feet (3,000), or if we take the distance at only fifteen miles, and the allowance for the convexity of the earth of 200 feet, the Pass itself being fifteen thousand eight hundred feet (15,800), the absolute height of this table-mass and high road will be more than eighteen thousand three hundred feet (18,300). It is quite impossible then to reckon the Pass in the Kylas chain beyond it, traversed by Mr. Moorcroft, on the way to Gartop, below nineteen thousand feet, and in every probability it exceeds this.—J. G. G.

direful, for the surface of the body collapses and becomes inanimate by a few minutes' exposure. We had experience of this before, in crossing at an elevation of 14,800 feet, although we were in October; what then must be the state of the weather in January, and at the lofty regions of 18,000 and 19,000 feet? This Pass is the common stage for beasts of burden; furze and fodder extend considerably higher on each side, and water springs from the ground, forming a lake at the distance of 150 yards. After finishing the observation at the Pass, we descended to Numgea, five miles and three quarters, against a furious westerly wind, raising clouds of dust, and half blinding us; our course was nearly due west. The highest cultivated fields of Numgea occurred on the road, and at about the same level as those above Shipke; the barometer was 19.512, temperature of the mercury 80°, and that of the air 72°. Wheat, barley, and ooa, were the crops; there are a few houses, the summer residence of shepherds and their flocks. To-day we ascended 5200 feet, and descended 6500.

On the 7th of August, I made a journey to Nako, distant ten and a quarter miles, crossing the Sutluj by a Jhoola or Sango of twigs just under Numgea; the bed of the river is here 8600 feet above the level of the sea, breadth of the stream seventy-five feet. This structure of bridge is neither convenient nor safe; in form it resembles a cradle, and from the rudeness of the materials is consequently much curved; it is entirely of twigs or ligneous fibres twisted together; the support for the feet consists of five or six of these ropes stretching from bank to bank; four feet above this, or to the height of the armpits, are leading ropes, similar to the others, at a most inconvenient distance for holding by: these are connected to the floor ropes by transverse twigs or ribs from one and a-half to two feet apart; in this trough the passenger presses forward. The twigs are ill twisted, and I certainly expected some accident when I saw a line of twelve or fourteen people on the bridge at a time, as only a month previous to this, two persons were lost by one of the side ropes breaking. From the irregu-

larity of the ground on the opposite sides of the river, the Sango has an inclination, and in passing to the right bank one encounters a steep ascent, and the leading ropes open to a width that cannot be grasped by both hands; just underneath this passage is a mass of rock occupying more than half the breadth of the river. We crossed with less comfort than was agreeable, and the tent slipped into the stream, and was lost. I had another at Soongnum, but could not have the use of it for ten days; this want, in a cold climate, where the route lies in the inhabited portions, is less severely felt: one may sleep quietly in the meanest house without the dread of being invaded by hosts of blood-suckers that keep up an irritable glow of heat all night.

From the Sutluj we had a continued ascent upon the face of a granite ridge to the village of Tuzheegung, which is perched amidst ruins of a frightful bulk at the height of 11,850 feet above the sea: the small space of soil which is not yet possessed by the rocks produces barley and phapur, enclosed by gooseberry fences; the inclined

southern aspect, and the vast extent of arid surface on every side, reverberate a surprising warmth, and favour an early harvest in the fields. We observed enormous masses of granite, their bases environed by ripe crops, and their tops shaded by drooping willows. The temple and residence of the Lamas is fully 500 feet higher; it lies east of this; we still ascended upon the loose rocks, and passing under banks of granite in a state of separation from their hold, arrived at the highest point of the road, 13,200 feet; we had now turned the extremity of the range, and leaving the Sutluj behind us we had the Lee on our left; beneath us nearly a mile, a perfect precipice; our course was then due north for four and a half miles, at a general height of 13,000 feet, upon granite crumbling away into sand, and producing only a few bushes of arid furze.

A fine prospect opened suddenly upon us here; a village in the heart of abundant cultivation already yellow, a broad sheet of water surrounded by poplar, juniper, and willow trees of prodigious size, and all closely pressed upon by gray

and massive wrecks. Nako is situated in the Tartar purgunna of Hungla, or Hungrung, lying on both sides of the Speetee or Lee; there are three divisions called Chookha, viz. Nako, Chango, and Hango, each comprising a few subordinate villages; the portion on the left bank of the Speetee or eastern extremity formerly belonged to the Chinese, and was given to Busahir about 150 years ago; the territory on the right bank was included in the district of Speetee, tributary to Ludak, and was attached to Busahir long ago. Nako contains upwards of twenty families of the sect called Dookpa, who either cultivate the ground or live by trade: there are four nuns, but no monks. The general dress of the people is similar to that of the other Koonawurees, with black instead of white blankets, the caps are of red wool, they wear necklaces of Poshil and precious stones, and of a nut like hazel, called Tha, which is peculiar to the Dookpas, and after the fashion of the Chinese they have boots tied below the knee with a garter. The objects of religious devotion are very numerous, and in addition to

those formerly mentioned, are temples called Donkten, having a pyramidal form of base rising in tiers like steps, and surmounted by a kind of urn.

Nako, August 8, 1821.

CHAPTER XI.

TOUR IN THE HIMALAYA.

Description of Nako: trigonometrical verification of the height of our station on Purgeool, determined barometrically in 1818 *to be* 19,411 *feet: proceed to Chango: advance towards the frontier of Chinese Tartary: halt at Changrezhing.*

I WROTE to you last from Nako, on the bank of the Speetee, near its confluence with the Sutluj. This is the highest village that occurs to the traveller who traces round the frontier of Busahir. Separate measurements, by excellent barometers and the boiling-point of water, indicate a little above 12,000 feet from the level of the sea; yet there are produced the most luxuriant crops of barley and wheat: rising by steps to nearly 700

feet higher, where there is a Lama's residence occupied throughout the year. The fields are supported and partitioned by dykes of granite; the other grains are phapur and turnips; the seasons are somewhat similar to those in our northern latitudes; and the grain is sown in March and April, and reaped in August and September. The effect of particular exposures and localities towards the developement of vegetation, cannot be more strongly contrasted than between this and the last camp at Numgea; for although here 3,000 feet higher, we find the crops further advanced to maturity. Snow falls generally towards the end of October, and does not leave the ground for nearly six months: yet it is the want of moisture in the air that prevents its earlier descent, since the severity of the climate at the beginning of October, is winter under a clear sky; but the snow seldom exceeds two feet. Close to the village is a pond, shaded by poplars, the leaves of which are given to the cattle; these, with juniper, and a few willows, are the only trees at this elevation. Fire-wood is of furze alone, and

this is scarce: it is piled upon the tops of the houses to dry. This place rears horned cattle, horses, and asses in great abundance; they are employed in trading to Ludak and Garoo; the Yaks are also used in husbandry.

I had determined not to pass this spot without taking a look at our old lofty station, near Purgeool, and verifying the measurement with Dollond's Portable Barometer, which is one of the best of the kind, having an adjusting screw for fitting the surface of the mercury to the zero of the scale, which reads off to 1-1000th part of an inch, and it was in excellent order. I was all prepared to move on the 8th; but it occurred to me that it would be more satisfactory to ascertain the altitude of the station above Nako, by Trigonometry, especially as I had no reason to distrust the former barometric indications of 14,675 inches, with four separate tubes, and at different seasons of the year. Having selected a pretty level spot, I measured a base of 219 feet, with the chain, which I had before compared with Dollond's Standard Scale, and the greatest difference in

three measurements was six-tenths of an inch. By choosing a station, forming nearly an isosceles triangle with the base, I obtained a space of about 3000 feet to determine the distance. Stone pillars were erected for the Theodolite at each of the places, and the three angles of the triangle only differed from 180° by 19″. I used every precaution to ensure accuracy, and repeated the horizontal angles several times round the Theodolite; but as that could not be done with the vertical ones, I read them off both ways, reversing the telescope. I also observed the altitude by Troughton's Reflecting Circle and the artificial horizon, which, when corrected for the distance of the mercury, did not deviate above 15″ from the result of the Theodolite, which is an excellent one, made by Troughton, graduated on both arcs to 20″. I have often observed latitudes with it, and never found the results differ more than 20″ from the mean of many by the Circle. The height of the station was calculated from the three points, and the extreme difference was seven feet. The mean of the whole gives it 7,447 feet above our

former camp at this village; which, taking that at 11,995 feet above the sea as before determined, the whole height of the station will be 19,442 feet, or thirty-one in excess of the barometric measurement. But I think it not unlikely it will come out a few feet higher, as the mean height of the barometer during the two days I halted at the former camp, was below 19.350, corresponding to a little more than 12,000 feet above the sea; the absolute elevation of this trodden spot at Purgeool, will therefore be about nineteen thousand five hundred feet (19,500).

I formerly observed so many stars for the latitude of Nako, that I was satisfied it would not be altered by any subsequent observations; however, as I had little to do I took the altitudes of a few with the Circle, which brought it out 31° 52′ 55″ or 5″ more than the Sextant made it. The climate at this season, notwithstanding the vast elevation of 12,000 feet, was extremely pleasant, the temperature of the open air being 52° at sunrise, remaining stationary at 75° for a few hours in the day, and the sun shone in all his course.

On the 10th of August we proceeded to Chango, a distance of nine miles, all along the bank of the Speetee. Part of the road traverses a plain studded over with enormous masses of smooth rock. Further on we pass along the face of the mountains, where the stratification when visible is nearly horizontal; the substances are granite, and a blue stone (perhaps whin-stone) the hardness of which resisting the gnawing decay of time and weather to the last hold, are forked into the most extraordinary forms; while across the river, the mountains appear to be wholly composed of gravel and clay; and from the very narrow boundary of the perpetual snow in these arid regions they present a frightful extent of barrenness. At the end of seven miles the road has descended but little, and tumuli of a clayey substance horizontally disposed appear at the elevation of 11,000 feet, in which are cavities worn obliquely to the strata; consequently the roofs represent a cornice of the most perfect form. The road now lies along the bank of a rivulet upon lime-stone rubble of many beautiful sorts

and colours, and crossing the stream we arrive at the plain of Chango. The village consists of four divisions, viz. Changmut, Changtud, Ghonpa and Garpok, the two latter inhabited by Lamas. In the whole there are twenty-five families of Tartars, twenty Lamas, and four Nuns; the Lamas are of the Neengma sect, who either go bareheaded or wear red caps; they have also necklaces of a large seed called Raksha. The soil on which the village is built is 10,000 feet high; but this upland region does not prevent its enjoying even a sultry summer season, the temperature rising to 80° in August. The situation is altogether very pleasant, so unlike the general rude character of the country; the dell is terminated on every side by arid mountains, on which nothing animate appears: on the west there is the Lee flowing in a tranquil expanse of bed; on both sides are bare thirsty ridges of gravel and clay without a bush; and on the east at the head of the plain there is a mass of the same sort with a round soft contour, all of gravel, but ending in peaked rocks and perpetual snow. On each side of this vast protu-

berance is a gorge or fissure, penetrating deeper than the eye can follow, and edged by cliffs of such loftiness that one grows giddy at the sight. Each gives course to a torrent, which no sooner escapes from its dark inaccessible passage than it is met by the industry of man, and conducted in tamer conduits to the fields, which rise above one another in tiers. The whole arable soil, houses, and inhabitants, occupy the space contained between the two streams which form the longest side of the glen, and open to the Lee. The grain crops are those already noticed at Nako, with ogul and cheena, and fine turnips, peas, and beans, all well tasted. The seasons are at least a month earlier than at Nako; seed time begins with March, and harvest in July and August; snow falls from November till March, but is scarcely ever a foot in depth. In April and May it rains frequently. There are Chostins, Donktens, and Manes, in all directions; there are also two Lagungs or Temples of Maha-Deo, one of which has a Durchut at each corner, connected by a string, on which are sewed numerous small oblong pieces of cloth, red,

blue, and white, inscribed with "Oom Mane paee me Oom," flying in the wind.

August 11, 1821.—Marched to Changrezhing, distant $6\frac{3}{4}$ miles. The road begins by ascending the ridge of mountains that encloses the plain of Chango to the Charung Lama Ghat, where the barometer was 18.877, or equal to an elevation of 12,600 feet. The general appearance of the country varies little; the rocks are lime-stone, clay-slate, and rubble of all sorts, through which are seen isolated pieces of feldspar in a state of decomposition; and on the Ghat itself are many pebbles embedded in clay, every thing recording the action of water; yet the river is nearly 3000 feet below this level. We now traversed a plain declining to a deep and rugged gorge giving course to the Chaladopko, a rapid stream rising in the perpetual snow, which we crossed by a good sango elevated sixty-one feet from the surface. The cheeks at this point are of solid rock, in horizontal layers, perfectly mural, and polished by the long friction of a highly agitated body of water.

The barometer was remarked here at 19.848, answering to about 11,400 feet. We tardily cleared out of this deep-worn water-course, and a mile further upon a level of high land brought us to camp. Changrezhing is a small piece of cultivation belonging to Chango: one or two people repair hither in summer with their flocks, and look after the few fields of barley; but there are no permanent residents. Having no tent, I got into a hovel, six feet square, the only one that was roofed. In such a place I had no where to plant the barometer, and I set it up in the open air, but was obliged to take it down immediately, on account of the wind which blew strong from the south-west. The mercury stood at 19.008, or an elevation of 12,500 feet. Here I met four Koonawurees returning from Choomoortee with wool, who informed me that the Chinese were waiting my arrival at the boundary, three miles further on.

The traders had each a matchlock, which rather surprised me, as I knew there were neither thieves nor robbers in the country. They carried them to shoot deer and hares, which are very numerous.

The route from Busahir to Garoo and Ludak passes through a tract of country similar to that we had just travelled; and cattle of all descriptions, as sheep, goats, asses, mules and yaks, are used for the transport of merchandise. Their progress is not very rapid, feeding as they go; and the traders in charge sometimes ride on horseback, and at others loiter about with the gun in search of game. At Leh and Garoo there are many wild horses called Keang and Yaks Dong: they are killed and *eaten* both by the Koonawurees and Tartars.

Camp Changrezhing, Aug. 12, 1821.

CHAPTER XII.

TOUR IN THE HIMALAYA.

Meet the Chinese: their prohibitions to my further advance: the gentleness of the Tartar character: return to Changrezhing: visit the union of the Speetee and Paratee rivers: their comparative breadth: remarks on Mansarowur: Rawun Rudd: the Sutluj: Indus: Gogra and Brahmapootur: proceed to Shealkhur Fort crossing the Speetee river, whose bed is at the enormous height of 10,000 *feet from the level of the sea.*

On the 12th of August, I moved my camp, intending to advance to the frontier, on the bank of a small stream. I found the black currant in the highest perfection; the fruit very large but scarcely ripe here. About a mile S. W. of the village of Chooret, I met twenty Chinese who said they had no orders to allow me to proceed. It

was near noon, and having no object in bringing my Camp to this spot, I only stopped for an observation of the Sun's Meridian altitude, which gave the latitude 32° 3′ 52″. When I began to return, the Chinese remonstrated, and begged of me to halt for the day; but this I had no intention of doing. Having taken altitudes of the sun with both sextants at Changrezhing, I required corresponding ones in the afternoon for the time, which I was anxious of ascertaining correctly, as I got an immersion of Jupiter's 1st Satellite at 3 o'clock in the morning. I was greatly pleased with the frank and open manners of the Chinese: they said, that although the orders of the Garpan must be respected, we should nevertheless meet and separate on friendly terms; and that they had sent for a sheep and grain for my people, which they hoped I would accept. The Tartars are of a very mild and peaceable disposition, and this character develops progressively on acquaintance. Both here and at Bekhur, although they had left their roof purposely to stop us, they advanced with an air of good humour

and friendship that we never observe on the confines of an Asiatic government. They had no fire-arms of any sort.

A short time after my return to Changrezhing; half a dozen of them came with grain and a fat sheep, which they insisted on my taking as a proof of our parting on terms of mutual conciliation. They would receive no money in return, but accepted of 8 seers (16 pounds) of dry tobacco. The Lee or Speetee river is formed of two large branches that unite below Changrezhing: one, named Zungcham, is derived from a double source, that from the snow in Bootpoo range to the N. E. retaining the name common to both, and the Paratee issuing from Lake Chumorereel, a beautiful sheet of clear water eight or ten miles long, and half that in breadth, lying to the Northward of Changrezhing seven days' journey; the other stream or Speetee has nearly the same length of course; its principal supply is received from the high Paralasa Range, on the N. W., which separates the districts of Speetee from Lanoul, one of the dependencies of Kooloo. Having now an

opportunity of measuring the breadth of both rivers, I was resolved to settle a disputed point between myself and a friend, as to the relative size of the two. He affirmed that no stream of any size could join the Speetee: my information represented them as equal; and this statement being received from at least twenty individuals, decided me on its accuracy. After observing for the time as I proposed, I left Camp and made a straight course over what seemed a gradual slope to the confluence; but at the end of a mile we got amongst crags and narrow water-worn passages, from which it was no easy matter to extricate ourselves. We were now evidently at the former margin of the river, but had 500 feet yet to descend to its present level. Before our eyes were the silent operations of ages; a more ruthless sight I never beheld. The whole bank was a concreted rubble, hardened by the air on the retiring of the waters. Successive ranges with a sharp perpendicular cliff and intricate sinuosities between them, tried our judgment and agility in no small degree, and cost us many a circuit for

our safety. In this section of the soil was a mixture of gravel, granite, gneiss, mica, and clay-slate, lime-stone and pebbles. The whole distance from Camp was $3\frac{1}{2}$ miles, and it occupied three hours. Near the stream are level steps, all covered with pebbles. The barometer at the water's edge showed 20.694; the temperature of the air $72\frac{1}{2}°$; or equal to a height of nearly 10,200 feet.

I measured a space of 149 feet along the bank of the Zungcham, with the tape, which is accurate enough for such a purpose; and taking a mark on the opposite side, I got the length of a perpendicular line, or breadth of the Zungcham or Paratee, ninety-eight feet. To get the breadth of the Speetee or Lee which joined from the opposite side, I fixed two points as nearly as I could judge at right angles to its course, and found the distance between them to be seventy-two feet. The Speetee is a gentle current with an uniform unruffled surface: the Zungcham again rushes with great rapidity, and evidently contains the largest body of water. It was sunset when we

began to return, and we were of course benighted; and losing the direction of Camp in the untrodden ground, we wandered part of the night with little comfort.

The Satellite, reckoning the time laid down in the Ephemeris correct, gives the longitude of this place 78° 37′. The survey makes it half a mile less, assuming the longitude of Shealkhur at 78° 32′ 30″ as formerly observed. I made several inquiries respecting the size of both streams in the dry season, and was fortunate in meeting with two people who had forded them a little above the junction to recover their horses, which are no sooner unloaded than they graze at liberty, and in the present instance had crossed the river in search of pasture. They stated the Zungcham to be $2\frac{1}{2}$ feet deep, and the Speetee two feet only, but rather broader. The disinclination to give credit to reports that are corroborated by others, seems most unreasonable. Mr. Moorcroft, in speaking of the Rawun-Rudd surrounding a portion of the Himachal, adds, "this being the report of natives must be received with

caution." Now I really do not subscribe to this; for by multiplying inquiries we must arrive at the truth. I have accounts from at least fifteen people that there is an island in Rawun-Rudd, on which a few Lamas reside; and it would be folly to doubt it, as the information was obtained from the inhabitants of different villages seen at various times within the last three years.

There is another point worth mentioning. I believe Mr. Moorcroft does not say whether the water of Mansarowur is brackish or not. According to the Quarterly Reviewer's notions, every lake without an exit must be salt. If that be the case, Mansarowur should have some drain for its water, since it is reported to be fresh and sweet to the taste; I may add, that my reports agree with Mr. Moorcroft's regarding the existence of a stream communicating with both lakes twenty years ago, which was crossed by a Sango, but it is now dried up: and the people have an idea that there is a subterraneous passage between the lakes.

Now that I am on the subject, I cannot avoid

saying a few words on the map of the Lamas, sent by the Emperor Kamhi of China, to explore the sources of the Ganges. They were not far wrong in ascribing a very long course to the river, which issues from the western side of Mansarowur, and which they called Lanktshow, or by Gilchrist's method of spelling it, Langchoo. This is the Sutluj, which near Shipke is named Langzhing Choo, or Langzhing Khampa. I could not find out the meaning of Zhing, but it appears to have nothing to do with the name of the river: for the Indus is called Singhe Choo, or Singzhing Khampa, Choo and Khampa, as well as Sampoo, Sangpo, or Sanpo, are Tartar words, signifying river, or great river. The Conghe Lake of the Lamas, is Goongeoo, or Koongeoo in my map, which communicates with Mansarowur. But the most remote source of the Sutluj is said by my informants to be at a place named Chomik Tongdol, where a small stream gushes out of the ground, and runs into Goongeoo Lake. This place must be very elevated, for allowing a moderate fall for the river, it will come out 19,000 feet, or 2,000

feet more than Mansarowur, which I think I have pretty good data for estimating at 17,000 feet above the sea.

Lamas reside upon the banks of this lake the whole year, and they must have a cold inhospitable abode, for the mean temperature at that elevation is more than twenty degrees below the freezing point.

It is strange that the Hindoos who *always* insisted on the heads of the Ganges being situate on the south-western face of the Himalaya, should have been discredited by European geographers, who have fallen into a great mistake, by bringing the Sutluj, and even the Indus, into the Ganges. The late Lieut. Macartney was the first person who ascertained that the Indus ran near the capital of Ludak. He also discovered that it passes Roodok, a place nearly half way between Leh and Garoo. Its source is north-east of the Kylas, mentioned by Mr. Moorcroft.

Rennel speaks of a mountain and a ridge of mountains, called Kentaisse, between the heads of the Ganges (Sutluj) and Brahmapootur. This

is probably a typographical error, for Kenlasse (Kylas), which the Lamas ought to have been well acquainted with, since it is a prescribed duty of pilgrims to make the circuit of it. The Kylas is represented as rising very abruptly out of the plain to a tremendous height, and its top is always white with snow. The journey, when performed expeditiously, can be completed in one day in summer, but two days are generally required. If I mistake not, Tienfentaller mentions a river of the name of Manchoo, issuing from the southern border of Mansarowur. This is the principal stream of the Gogra or Kalee, having its source in the district of Poorung, of which Tuglakot, or as the Tartars call it, Tugla-khur, is the chief place. The river is called Manja or Mabja Choo, and there is a long day's journey between its source and Mansarowur, a range of mountains intervening. The Brahmapootur is named Tamjoo Khampa, or Erechoomboo, and one of its streams takes its rise to the south-east of Mansarowur. The road from Garoo to Teshoo Loomboo and

Lahassa lies along its bank; and I have seen many people who have travelled this route.

August 13, 1821.—Brought my camp to Shealkhur, distant 6½ miles. For a third of the way, the route was that by which we came. Here we deviated towards the right (S. W.), and proceeded along a gently undulated plain of gravel, strewed over with chips of substances that seemed to have been subjected to some grand agent; and here and there a solitary tumulus eaten away by the winds, and fast subsiding to the surface. Every thing in this neighbourhood is extraordinary; and when we couple these appearances with the pebbles in the Ghat, the horizontal strata in the fields of Chango, and the loamy protrusions in the mountains near Shealkhur, where the depositions are also horizontal and of the most beautiful regularity, we cannot but suppose some great reservoir of water to have collected till it found an outlet, and was drained off by the Lee. We ascended gently to the Chongba Pass, or rather the edge of the land. Sand-stones and pebbles like those of a sea-shore occured in this spot; where the baro-

meter showed 19.150, or a height of 11,900 feet. From this place the Fort of Shealkhur has a pretty appearance. The Sango under it has a depression of 25° 42′. We now descended to the river (Speetee) one mile over scattered pieces of lime-stone, rolling under our feet and producing much trouble.

We crossed by a good Sango of three fir-trees planked over at this the narrowest point of the stream: the length of the bridge measured ninety-two feet. The stream above and below this varies from 120 to 130 feet; the body of water looks greater than that of the Sutluj, but it is not so rapid. The bed of the river is here 10,000 feet above the level of the sea, the barometer pointing to 20.853. The Fort of Shealkhur stands on the very brink of the channel, nearly 400 feet higher, and is on the parallel of 32°. It lies North and South, and is above 300 feet long, but very narrow. Inside are houses all round, leaving an extremely small space in the middle. The walls are ill built, of loose stones and unburnt bricks, but the site is rather commanding. The

slope on the Speetee side is 35° for 400 feet. To the North and West there is a similar natural scarp to a rivulet. The South face is only of easy access, in which direction there are a few houses and fields. The climate resembles that of Chango, and the grain crops are the same. Apricots are plentiful, of a very superior flavour. There are twenty families of Tartars, ten Gelongs, who live in a goomba or monastery, and five Nuns, who reside in a chomoling or convent.

The Gelongs always wear white trousers; and the rest of the garment is a red blanket. They either go bare-headed or have large peaked yellow caps. There are many whirligigs in niches in the walls of the houses. There is a great Deota here, named Joongma, which the people brought to me. All the Gelongs accompanied it beating drums and cymbals. They gave me a khuttuk or silk scarf, which they said would preserve me from all danger if I kept it carefully, as it belonged to the god: in return I made them a present of three rupees, with which they were well satisfied. I lost the khuttuk however.

Soomra, the last village in Busahir towards Ludak, is about four miles distant along the banks of the Speetee, in a W. N. W. direction. Seven or eight miles beyond it is Laree, the frontier village of Ludak, in the district Speetee which I was desirous of visiting. But at this season, as the river cannot be forded, the road leads by Changrezhing and Shuktud in Chinese Tartary, near which there is a natural bridge of rock across the Zungcham. I also wished to take a look at the hot wells named Zungsum, about four miles to the northward, between the Speetee and Zungcham; but as there was no Sango it was impossible.

I was desirous of getting a little of the water, and finding the temperature, which is said to be hot enough for cooking rice. These springs are of the greatest repute in this quarter of the hills, and diseased people travel from distant places to bathe in them and drink the water, which is said to have the effect of exciting a great appetite. There are eight or ten springs not far from the river, each of which has a specific virtue

against some complaint; and the names of the different diseases, together with directions for bathing and drinking the water, are engraved in the Tartar language upon large flat stones fixed by the side of each well.

Camp Shealkhur, August 13, 1821.

CHAPTER XIII.

TOUR IN THE HIMALAYA.

Journey to Leeo: frightful nature of the path, and great danger in the ascent and descent of the Yoolang abyss: size and rapidity of the Speetee river: ascent to Hango 11,400 feet, and luxuriance of the crops at this height.

SHEALKHUR, *August* 14, 1821.—The direct road to Leeo was represented to us as utterly inaccessible to persons with baggage. I therefore sent them forward by the way of Chango and proceeded by myself. The distance is twelve miles, and the route lies down the glen of the Speetee along the edge of the mountain slope. The road, although good, is a progressive acclivity for half the journey, and the fatigue of climbing is augmented by the intense heat, which is collected

and radiated by the arid surfaces of the rocks; so that the traveller receives but little agreeable recreation from the height of the region to which he ascends.

The summit of the road is 12,900 feet above the sea, and approached by a strath thickly clad in furze, among which as one recognises the russet mantle of heath, he looks around in expectation of starting grouse. A few fields of barley or wheat, on a southern exposure, had a better appearance than we could expect at this extraordinary height. In front, crossing the line of road, is seen a ridge of white cliffs stretching out from the stem of a range patched with perpetual snow. The ground slopes away to it, and one hurries forward with all the eagerness naturally resulting from the accomplishment of passing the crest of a six miles' ascent; the ridge of cliffs in view only raising their heads above what appears a continuity of surface, till the traveller arrives suddenly at the brink of a chasm, perhaps neither equalled nor exceeded in craggy horror by any gorge in the whole mountains, and into which he

must descend with no very certain prospect of getting out again. In the bottom of this water-worn abyss, the barometer was 20.348, answering to an elevation of 10,700 feet.

This stream is called Yoolang; it is chiefly fed by the snow, and offers a grateful refreshment to the weary traveller, half choked by whirlwinds of dust, and blind from the glare of the rocks in his tardy descent over the loose surface. The rock here is chiefly lime-stone; but banks of a substance like pudding-stone overhang the stream, through which springs of water filter, exhibiting all the tints of the rain-bow; and in one place a stream gushes forth from the solid mass, and is precipitated in a transparent cascade. From this, the angle of ascent is generally 34°, and the hypothenusal distance one mile; and in this space we perpendicularly ascend 2000 feet. Difficulty and danger in a thousand forms attended our progress. The whole slope is of a calcareous nature; and by the alternate action of melting snow and frost, some places are so much indurated that the toe cannot get any support to preserve the balance,

which is always inclining to the chasm beneath; and the hands, in grasping at the bank, often bring away the mass of rock laid hold of, which displaces others in its passage, till they are showered together to the bottom amidst confusion and noise. Niches were required frequently to be cut for the support of the foot; and during this period it is absolutely necessary to have a hold by the nearest knob of rock, frail as it often is. Travellers then appear in a line half-hanging over the precipice. The persons with baggage could never have mounted over such places in safety. The road is more intricate than it was in 1818, when a train of sixty loaded persons passed with difficulty. How we then succeeded free of accident still surprises me. Every year creates a fresh obstacle to adventure, and a short time hence the passage will be annihilated, presenting only an unapproachable wreck.

We reached the top without any misfortune, but wearied with climbing. We sat upon the verge of the gulf, and enjoyed the refreshing temperature of a breeze, at the height of 12,600 feet,

blowing over an extensive heath, which continues with a slight depression for a mile. We then descended very rapidly by zig-zag tracts, upon a face of loose gravel, to Lee or Leeo. The journey occupied me seven hours, but the baggage, having made a circuit by crossing and re-crossing the Speetee, did not arrive till night. We had rain throughout the march; but as usual only slight showers.

Leoo contains twenty families of Neengma Lamas, and four Nuns. It occupies a slip of soil upon the right bank, and in the bed of the Speetee, embosomed by sterile masses glowing under the ardour of a tropical sun. From this the climate acquires a delicious softness: the productions are varied; and we are regaled as in a garden, amidst piles of granite, clay, parched mountain-ranges, and eternal snow. On the north of the village is an extensive well-cultivated plain, studded over with apricot-trees. On the east is an insulated rock, sixty feet high, which was formerly the site of a fort now in ruins. Southward it is washed by a stream named Leepak, falling into the Spee-

tee, a bow-shot distant; and on the west, is the acclivity of mountains terminating in eternal snow, and unproductive. The extreme height of the village is 9200 feet.

August 15.—We were, this day, detained by rain. In the evening it cleared up, and the snow appeared to have descended on the granite range, across the river, to 16,000 feet, as I reckoned it fully 1500 feet below the summit of the pyramidal peak to which we formerly assigned 17,500 feet. When I was at Nako the lower limit was certainly not under 18,500 feet, as there was only a narrow border on the ridge we visited near Purgeool, which is 18,700 feet.

In the afternoon I walked down to the Speetee, and was instantly struck with the great stretch of the stream within the banks. I resolved to measure it, and sent back for the tape and small theodolite. Marking out 100 feet upon the sand. I took the bearings of a stone on the opposite side from the extremities. It was a beautiful evening, and I proceeded to the calculation on the spot; but you will be surprised

at the result. By a rough protraction the breadth of the river came out 252 feet, and consequently I concluded it was erroneous. I therefore tried it again, performing the operation with more exactness on a larger scale; but this giving 260 feet, led me to suppose an error in the observation of the angles, although they were read off twice. I then fixed on another point, a quarter of a mile up the stream, and measured a base of 200 feet, observing the angles as before: and this, when protracted, made the breadth 277 feet. I was now convinced of the fact. On returning to camp I calculated both the operations by Logarithms, and obtained 258 and 274 feet. These were by no means the extreme breadths, they appeared to me only the medium. The river at this spot is very rapid, and at this season, I think, contains even a greater body of water than the Sutluj.

August 16.—I proceeded to Hango, a distance of $7\frac{1}{2}$ miles. Crossing the Leepak under the village, by a firm well-raised sango, we com-

menced the journeying by a formidable ascent of 1½ mile, the angle of the road varying from 15° to 20° which brought us to the height of 11,600 feet. At this level we proceeded for one mile, winding round the sharp projections of the rocks into recesses and out again, where the path-way bordered upon mural precipices of 2000 and 3000 feet terminating in the Lee. They were all composed of a crumbling schist, so shattered by age, that the traveller shudders as he picks his steps among them. We now turned our backs to the Lee and its dark abyss, and entered the Chooling Dell, which sends down its waters to this river. To the south-west the faces of the mountains assume a less savage character; but they are arid and stripped of soil. No grass covers them; but a few tufts of aromatic plants and broom is all the vegetation they present. The want of moisture in the bowels of the mountains, the gravelly nature of their surface, which reverberates the fierce rays of the sun, and the dry state of the air, give a parched feature to the country, which is more

bleak and desolate than the regions of perpetual snow. With such a scene around us, the appearance of a village and green fields is singularly pleasing to the eye; and we passed those of Chooling and Hara, where lime-stone predominates; and crossing the pebbled bed of the stream, we ascended through yellow fields to the camp.

The village of Hango is fully 11,400 feet high: it has four distinct divisions, viz., Hangme, Hang, Thoongrama, and Ghonpa. These contain thirty families of Tartars and two Nuns. It is situated at the head of a dell, in the bosom of cultivation, extending nearly a mile in one direction, and half that in the other. There are a few poplar-trees, but apricots do not vegetate. I have seldom seen more luxuriant crops: the ear of the Ooa showed so large and full, that I was induced to count the grains, and I found the average of eight, picked casually, to be seventy-eight fold. The produce here is the same as at Nako; most of the fields were ripe, and some even cut. The glen runs nearly east and west; a stream flows

on each side of it, and one through the middle; and the supply of water never fails. The mountains are lime-stone, and assume a variety of forms.

Camp Soongnum, August 18, 1821.

CHAPTER XIV.

TOUR IN THE HIMALAYA.

Leave Hango; ascend Hungrung Pass, 14,800 *feet: height of Purgeool Mountain; descend to Soongnum: some remarks on the Tartars and Lamas; description of Soongnum: grand Lamas of Tibet; latitude and longitude of Soongnum: preparations for crossing the high Pass to Speetee: Tartar manner of providing supplies for their long journeys over their bleak and sterile mountains.*

My last letter brought up my narrative as far as the village of Hango, at the height of 11,400 feet above the sea. On the 17th of August, I advanced from thence towards Soongnum, a distance of $9\frac{1}{4}$ miles. As the road was good I hired a horse of the mountain-breed, called Ghoont: they are short, strongly made, hard-mouthed, and

frequently a little unmanageable. In ascending hill-faces, or pacing along steep rugged declivities, it is best to let them have their own way; for in an intricate passage they show more sagacity than the rider. Their common pace over the mountains is a sort of amble, stopping now and then to breathe; and no application of the whip will move them. They are sure-footed, and sometimes bring up at the edge of a precipice, to the horror of the rider; but if he has courage and steadiness to keep his seat, he will pass in safety. They are not so active in ascending the hills as the low-country horses; but they descend with more speed, and can endure great fatigue. The finest breed is produced in Ludak and Lahoul.

The road from Hango leads straight up the mountains, which are of lime-stone, and fritter away by the action of the air and weather into a surface of gravel, which is however thickly clad with furze, juniper, and short grass, the arid pasturage of the cattle. I saw upwards of thirty horses running loose, feeding upon the short tufts

of vegetation even higher than the pass itself. In the crest the barometer was 17.602, temperature of the mercury 69°, and that of the air 49½, which will give the height 14,800 feet, the same as we made it in October, 1818, when the thermometer was 36°, and the wind benumbed us to the bones. It was here that the blood forsook the surface of our bodies, and we travelled three miles half torpid and congealed. It was cloudy when I stood in the Hungrung pass, and the westerly wind blew chill upon us: a few patches of snow rested 300 feet higher, the remains of a recent fall, but it would all dissolve with the first clear day.

Across the Speetee, upon the heights above Nako, the snow had a depression of a few minutes. A thick layer covered the Purgeool, and the summit behind it was loaded. There appears to be a range of lofty points stretching out from these colossal masses, and I saw a third peak in the rear. They are prolonged in the direction of N. 10° E. and S. 10° W., and probably join the great chain that follows the course of the Indus on the

left bank, Our high station on Purgeool was covered with snow to about 3000 feet below it. From the N. W. to S. W. the mountains were all white; and one peak of Kylas or Ruldung presented a cone of snow. From N. 15° E. to N. 10° W. a very distant range was seen at an elevation of 1° 12′; it seemed to run N. 60° W. and S. 60° E. Not a point of rock rose through the snowy covering even when viewed by a telescope. The village of Soongnum had a depression of 13° 45′, Purgeool an altitude of 5° 58′, and the peak behind it subtended 5° 39′; this last is the highest, and seems to be twenty-two thousand six hundred and thirty feet (22,630). I had not an opportunity of ascertaining its elevation before. From the Pass to Soongnum is six miles, all descent, by the course of a stream; thus, in a couple of hours we were transported from the zone of barrenness and perpetual frost to a verdant valley abounding with grapes of a luscious flavour, apricots, and apples; the difference of the level being 6500 feet, equal to a change of latitude of 23°.

To-day I took leave of the Tartars, after a

month's sojourn amongst them; and this I did with feelings of respect towards them; for I had paid some attention to their language, and could talk it with greater ease than the Koonawuree dialect. At first I thought less of the Tartars than their neighbours, but they improved on further acquaintance, and I now am of opinion that they are the frankest and most honest race of people I have seen in India. They possess neither craft nor ingratitude, and they may be trusted to the world's end. Thieves and robbers, the indigenous inhabitants of mountain-regions, are unknown; and the same character belongs to the interior tracts of Busahir, or to that portion of the interior called Koonawur lying within the snowy mountains.

The villages between Nisung and Shipke once belonged to the Chinese, but were given to Busahir many years ago, for the support of Tuzheegung Thakoordwara, on the right bank of the Sutluj, opposite Numgea. They, together with Hungrung, are now included in Koonawur; but the inhabitants are called Zhads, Bhoteeas,

or Bootuntes : and so the country is often named Bhot, and Bootunt: but the common appellation of that under the Chinese authority is Cheen-Maha-Cheen. The people are chiefly Lamas, eat bullocks' flesh, and have no intercourse with the Hindoos. They are very different in appearance from the other Koonawurees, and frequently resemble the Goorkhales. They have small eyes, and high cheek-bones sloping to the chin, which is generally pointed, and very few of them have either mustachios or a beard. They are fond of all kinds of ornaments, and have as many as they can afford to purchase. These are chiefly necklaces and ear-rings, formed of beads, of silver, coral, and other precious stones : they have also tassels of red beads hanging from the rear of their caps, and wear bracelets and silver chains round their necks.

There are three principal sects amongst the Lamas: Neengma, Dookpa, and Geloopa. The two former wear red caps, the last yellow ones. The Dookpas and Geloopas seldom marry ; I believe they are prohibited from doing so; but

there is no restraint on the Neengmas. The Gelongs and Nuns are the chief votaries among the Lamas, and never concern themselves about worldly cares. They are always chanting hymns, or printing and writing sacred sentences; it is rare to see a Gelong who is not singing; and if he is asked a question he answers it and resumes his song, which is generally the favourite invocation, "Oom Mane paee me Oom." The Nuns are scarcely to be seen, seldom leaving their convents. There is a sect of wandering Lamas called Khampas, who are similar to the Yogees of Hindostan. They visit the sacred places, and subsist partly by begging. Some of them are very humorous fellows: they put on a mask, perform a dance, singing and accompanying it with a drum. The most laughable scene of this kind I witnessed was at Hango, where two Khampas, with a fiddle each, played, sang, and danced all at once, with great activity, holding the fiddle over the head, behind the back, and in a variety of other positions.

The Tartar villages are neat, and are frequently

in detached portions. The houses are flat roofed, and covered with earth. They are ill-built on account of the scarcity of wood, which is a necessary material in the construction, where stones cannot be cut. The only trees on the Chinese and Ludak borders are to be seen where man has settled, and they are all reared by his industry. These are poplars and apricots; the former grow at a height of 12,000 feet, but the upper limit of the apricots seems to be somewhat under 11,000 feet. The fields are enclosed by stone dykes, or are fenced by a hedge of gooseberry-bushes.

To the N. E. of Hungrung, where the country is too elevated for cultivation, there are many shepherds, called Dokpo, who tend flocks of shawl-goats, sheep, yaks, and horses, and live in tents of yaks' hair blanket, named Rebo, and wander about from place to place.

I have already mentioned Chostins, Donktens, and Manes, which are numerous near the villages. The whirligigs are not so common; they are nothing more than hollow cylinders filled with pieces of paper and rags printed with sacred sen-

tences, and closed up. They are placed on a perpendicular axis, generally in a niche in the wall, and are always turned from north to east. There is a smaller sort, not above half a foot long, twirled about in the hand. A string with a piece of poshil at the end, is fixed to it, to give it a rotatory motion.

The Tartars frequently take their dram of spirituous liquor in the cold mornings; and in their journeys over the arid mountains, where water is frequently beyond reach, they take a dish of tea before starting, which is said to be an excellent preservative against thirst. The tea is procured from Garoo, but it has no flavour, and is otherwise very bad. They prepare it by boiling water and infusion, as we do, but substituting for milk and sugar, salt, ghee, and ata (butter and flour).*

* "Our horses having swam the river, we went into one of the Buratsky tents, till they were dried. The hospitable landlady immediately set her kettle on the fire, to make us some tea; the extraordinary cooking of which I cannot omit describing. After placing a large iron kettle over the fire, she took care to wipe it very clean with a horse's tail that hung in a corner of the tent for that purpose; and then the

There are several sacred places frequented by the Lamas: one occurs in Lahoul of Chumba,

water was put into it, and, soon after some coarse bohea tea, which is got from China, and a little salt. When near boiling, she took a large brass ladle and tossed the tea, till the liquor turned very brown. It was now taken off the fire, and, after subsiding a little, was poured clear into another vessel. The kettle being wiped clean with the horse's tail, as before, was again set upon the fire. The mistress now prepared a paste of meal and fresh butter, that hung in a skin near the horse's tail, which was put into the tea-kettle and fried. Upon this paste the tea was again poured; to which was added some good thick cream, taken out of a clean sheep-skin, which hung upon a peg among the other things. The ladle was again employed, for the space of six minutes, when the tea, being removed from the fire, was allowed to stand awhile in order to cool. The landlady now took some wooden cups, which held about half-a-pint each, and served her tea to all the company. The principal advantage of this tea is, that it both satisfies hunger and quenches thirst. I thought it not disagreeable; but should have liked it much better had it been prepared in a manner a little more cleanly. Our bountiful hostess, however, gave us a hearty welcome; and, as these people know not the use of money, there was nothing to pay for our entertainment. We only made her a present of a little tobacco to smoke, of which these people are very fond. I have given this receipt with a view that some European ladies may improve upon it."

Bell's Journey from St. Petersburg to Pekin, vol., 1. p. 269. Glasgow, by R. and A. Foulis, 1763. Two vols. 4to. (This was near Selinginsky.)

called by them Gurja Phakpa, where is a famous temple; another Munmahez in Chumba, situate amidst the eternal snow in the outer or dividing range of Himalaya. There is a sacred tank used for bathing, and nobody ventures beyond it, in consideration of two stone images, which are pointed out to the pilgrims as monuments of heedless adventurers who passed the prescribed bounds. This is the work of some crafty Brahmin, no doubt, and is not the only pious fraud of a similar kind.

Muneekurn is two days' journey N. E. of the capital of Kooloo, where there are boiling springs; but the places of worship in this quarter esteemed most sacred by the Lamas, are Jooala-Mookhee and Rowalsir. The former is remarkable for a flame which issues from the earth, and is situate in the Rajship of Kootoch, commonly, but erroneously called, Kangra, which is only the name of a small district. The temple is a large and handsome building, and within it is a stone reservoir, sunk below the floor, from three sides of which issue forth flames through iron pipes about a quarter of an inch in diameter. The chief Jooala

is a little larger, and comes from a corner of the interior of the temple.

Rowalsir in Mundee, about ten miles N. W. of the capital, is a tank, a bow-shot across, in which are six or seven small floating islands, probably of wood covered with earth. The largest is forty or fifty feet in diameter, projecting in the middle like a hill, and on the top there vegetates a tree and several flowers. It is said that the islands traverse without art or assistance from one side of the lake to the other in the morning, and return in the evening. Sometimes they are all in motion to-together; but for the last two years only the largest and another have moved about. It is also reckoned an obligatory duty of the Lamas to perform the circuit of Kylas and Mansarowur, or Mapang. The latter is said to occupy four days' journey. The lake abounds with fish, which are held sacred; water-fowl, of many species, frequent this elevated spot, and on the approach of winter they migrate to Hindoostan. Rawun Rudd, known better by the name of Langa Cho, is the largest lake; but as it entails no religious penance,

I could get but uncertain accounts of its size. It was, however, stated by eight or ten different persons, to be six or seven days' journey in circumference.

On my arrival here I found Putee Ram, the traveller mentioned by Mr. Frazer. He was in bad health, and had neither gone to Garoo nor Ludak this year. He was not unmindful of his friendly reception at Soobathoo, and brought me thirty seers of flour, together with ghee, peas, and sugar, and some of the finest apricots I ever tasted, both green and dried, of a species not common in this quarter. The seed originally came from Cabul or its neighbourhood; and the fruit is of the same kind as that brought from the westward into India, under the name of "Aloo Bokhara." Amongst other presents that Putee Ram received at Soobathoo, last May, for deviating from his homeward course to answer some questions relative to the physical geography of the interior, were ten silver rupees, which he had made into a pair of bracelets, and showing them to me, observed that he would preserve them with his life.

I shall, perhaps, stop here a week or ten days, and then attempt the Pass to Manes of Ludak, There are four Speetee people who arrived here six days ago: they represent the Pass at the time of crossing as sprinkled with only three inches of new snow; but now it will be above a foot in depth, as it has been snowing thickly upon the heights for the last five days; it will, however, dissolve under a short duration of sunshine. Dollond's Barometer is still in high order; there is not the smallest speck of air perceptible in the tube, and the stroke of the mercury against the sealed end is as elastic as the first day of its employment, showing a perfect vacaum. If it reaches the Pass in safety, it will have given a full equivalent to its value. The other tube was found broken at Shealkhur, but I intend to boil another to-morrow.

At Hango I saw several Koonawurees returning from Ludak, who informed me that Mr. Moorcroft was at Noobra, which I believe you will find in the map. It is three days' journey from Leh, on

the road to Yarkund, whither he has gone to see a grand festival. What are his plans I know not; but he seems either unable or unwilling to quit that neighbourhood till the arrival of supplies from Futtehgurh.

Our friend, Putee Ram, I fear, will not be able to accompany me to Manes, which I regret, as he is intimate with the Dankur Commandant; but he intends to make intercessions for my friendly reception at the frontier, by means of an intelligent person who is to proceed in advance, and I shall likewise be furnished with introductory letters to the Chief of the district, titled Kharpon. Notwithstanding this, I foster no expectations of reaching the capital of Ludak by this route, as Speetee is tributary to the Chinese,

I have preserved specimens of the whins, broom, and other Tartaric productions; and some of the sacred sentences of the Lamas engraved on stone, which I know you will be anxious to see. In a field of such variety it is difficult to fix the attention long upon any one object; but, perhaps, after

all, a little knowledge of every thing is more desirable than a disquisition upon a few subjects only.

Camp Soongnum, Aug. 18, 1821.

CHAPTER XV.

DESCRIPTION OF SOONGNUM.

My last letter to you mentioned my arrival at this place (Soongnum), where I have since remained, delighted with the mildness of the climate, the productions of the soil, and the social character of the people; a short account of which, I should hope, will not prove uninteresting.

Soongnum is in the Purgunnah of Shooe, or Shooung, lying on the right bank of the Sutluj; it has four divisions, Gungel, Soomchoo, Zhungram, and Yooshooung, and about 900 years ago belonged to an independent chief. In a comparative view, it is populous and flourishing, containing the residence of seventy families, and a convent of

thirty nuns. According to a custom prevalent in Koonawur, the houses of the principal residents have names which are common to their owners, and, indeed, are more frequently used in their foreign and domestic intercourse, than their own names. In this respect they resemble the Scotch *Lairds*, who are commonly known by the names of their estates. There are sixteen houses in this village so designated; and Putee Ram is better known as "LAHOUREE PUNG," which is the name of his house. The village is 9350 feet from the level of the sea, and lies in the bottom, and on the side of an extensive dell, watered by a stream of considerable size. This for three miles is one plot of cultivation, in which are forests of apricot-trees, apples, and walnuts, and slips of vineyard yielding grapes, vieing in size and flavour with the best growth of Kabul. To the N. E. and S. W. in the direction across the dell, the mountains rise within the limits of congelation; and are crossed opposite the village by passes nearly 15,000 feet high. Their bases approach so as to confine the dell to half a mile in breadth. To the

N. W. by the course of the Darboong and line of the valley, the mountains meet and form a stupendous barrier, which separates the country from Speetee of Ludak. The Darboong rises here in the perpetual snow, and is fed in its course by other icy streams, till it swells into a powerful torrent, watering thousands of fields in its way; and then rushes into the Sutluj five miles below the village,

In this neighbourhood, the keloo fir begins to raise its head, stunted and thinly scattered. The climate here affords two crops; the standard grains are barley, ogul, and phapur. The barley is sown in Bysakh, (May), and cut in Sawun (July). The ground is then prepared for the ogul and phapur, which are reaped in Kartik, (October). There is no wheat cultivated here: but in higher situations on the mountain-sides there are a few fields of wheat, which return a fruitful harvest, and peas, beans, and turnips are abundant. The climate at this season is very agreeable; the white soil is alive and blooming under a warm sun.

What is there to indicate this elevation of 9300

feet? The thermometer in the open air ranges from 60° to 82° the extremes, and in the house from 65° to 78°. For two or three hours after sun-rise, low clouds hang upon the hills, but disperse as the day advances, when they hover about in light patches; and in the evening and during night the sky is clear, except in the N. W. and W., where banks of dark clouds charged with thunder, repose above the lofty mountains. About 1 P. M. an easterly wind springs up and increases in strength till 5; when at its height, it progressively subsides and ceases at 9 o'clock. Snow falls in all November, and covers the ground more or less till March, but is seldom two feet in depth. The beasts of burden are horses, asses, and mules; but there are only two yaks in the place.

There are a few Lamas and a Dookpa, who prints sacred sentences from blocks of wood: "Oom Mane paee me Oom," is the common inscription. Manes, chostins, and whirligigs, are numerous: three of the latter are kept in motion by water, and go constantly. The largest whirligig is about nine feet in height, and four and a

half in diameter, painted with figures and letters. The house in which it is placed has a wooden dome on the top, and flags at the corners : around it is an open verandah supported on posts, where there are about forty small whirligigs. The inside walls are painted with a variety of ill-finished figures. The grand whirligig is in the centre of the room, and is cased in a wooden frame wrapped with curtains and hangings of China silk. It is turned by ropes and a winch, and requires two people to work it properly. On the right hand as you enter is a book-case containing three rows of five compartments each, in all fifteen ; each of which is fitted with separate slips of paper, piled and bound together by pieces of wood and silk scarfs. The papers are all of the same size, two feet long and one broad, and are very neatly inscribed with sacred sentences in the Oochen character. These, I was informed, were brought from Lahassa, and cost 500 rupees. At stated periods the Gelongs and Lamas assemble to read them; and on grand days there is exhibited an iron stand of five squares one above

the other, tapering to the top, which is illuminated with one hundred and eight brass lamps, and is made to revolve in the same direction as the cylinders. On the left hand are many small brass images from Teshoo Loomboo, very well executed. Before them are placed cups of fruit and water, which are replenished daily. Every morning and evening a lamp burns for one hour and a half or two hours, and the large cylinder is put in motion—the faster the better. It is also frequently whirled about during the day in the presence of a few Lamas, who chant hymns, ring bells, and sound cymbals, sunks, and trumpets. Above the whirligig, at one side, is a bell, which is struck by a projecting piece of wood at each turn, and the number of revolutions is sometimes counted and noted in a book.

About half a mile N. W. of Soongnum, on the left bank of the Darboong, is a grand Lubrung (place of worship,) built about three years ago. On each side of the doorway is a handsome chostin, passing which, you immediately enter into a large room which leads to three smaller

ones, each having three arched doors. All the rooms have wooden cupola roofs, which open and shut; and the walls of the largest are painted with figures of men and animals. In the front room is a frightful and hideous image called Dakpo, which is said to represent Mahadeo in wrath. It is about three yards high, and has four feet, each treading on a man. Six arms are given to the monster; with the two front ones he embraces a woman; the next hand below on the right, holds a sword, and the third a spear. Corresponding to these two, on his left side, is one grasping a human scull, out of which he appears to be drinking, and in the other is a large scorpion. Round his body are tied a number of earthen balls representing sculls, and altogether he has a most horrid appearance. In the right-hand room is a gigantic figure at least twelve feet high, called Shikja Thooba. His countenance is mild and placid, and before him are several brass cups with fruit and water. In the left-hand room is a whirligig seven or eight feet high, decorated with silk hangings and scarfs.

Once a year, in the latter end of August, the Lamas and Nuns of Kanum and Lubrung assemble at this place, and move in a procession through the district, singing as they go, and stopping a few days at each village; and they are fed by the inhabitants. They arrived here on the 23rd, and paid me a visit the following day. They sung me a song which I thought very agreeable: the music of the chorus was soft and melodious, and they observed the time with great precision. On the 25th of August another set came to pay their respects, and received a present. Among the Lamas I saw many handsome youths, but not a single good-looking Nun out of fifty. Putee Ram shrewdly remarked that the ugly females, having little prospect of being married, are chiefly those who retire to a convent. The Lamas admit proselytes at all ages, and any person can become a Neengma, Dookpa, or Geloopa, at his pleasure; but they are commonly initiated from the age of seven to ten years. A material part of the Lama religion consists in repeating "Oom Mane paee me Oom," and the oftener and faster this is done,

the greater the sanctity: some of them scarcely do any other thing. In this devout office they count the number of repetitions by the beads of their necklaces, which contain the mystic number 108. The most fervent amongst them daily register in a book the number of times they have repeated "Oom Mane paee me Oom." The grand Lama of Lahassa, called Geaboong Rimboche, who resides in the monastery of Potala, is the head, or chief pontiff of all the Lamas. In succession to them is the Punchin Rimboche of Teshoo Loomboo. These personages are supposed never to die; on the dissolution of the body, the spirit takes possession of another tenement: the third in order is Lochawa Rimboche, who is believed to be regenerated as the others.

For many years past the Lochawa has appeared in Busahir: he was first born at Soomra, about the time of the invasion and plunder of Teshoo Loomboo, by the Goorkhalees. At the age of eighteen years he went to Teshoo Loomboo, where he died. He afterwards made his appearance at Shealkhur thirty-five years ago, was sent to

Teshoo Loomboo, and also died. He then appeared at Nako, and two children had the same marks by which it is said he is recognised. This was something uncommon, and many letters passed between Busahir and Teshoo Loomboo upon the subject. At last it was decided that they were both Lochawas; but one had the precedence of the other. Both are now about ten years of age, and they reside in the monastery of Kanum, and are taught the mysteries of their religion. Punchin Rimboche has twice sent for them, but they will not repair to Teshoo Loomboo for six or eight years to come.

I found abundance of grain at this place, and collected supplies for ten days. Things are weighed here upon the plan of the steel-yard and lever, named Pore, which is a very convenient method, and as far as I observed, is uniform and correct. There is another sort of balance called Tool, used in the lower parts of Busahir. It is on the same principle as the "Pore," with this difference, that the weight is formed in the lever by a knob of iron at the end, and the fulcrum

which is a piece of string, is shifted according to the gravity of the thing weighed. I had the Transit up twice, and showed several of the people stars in the day time. Putee Ram was very inquisitive, and asked me if the stars really moved from *West to East*. I explained the deception by pointing the telescope at objects in the vicinity. The latitude of Soongnum is 31° 45′ nearly, and the longitude by an immersion of Jupiter's first satellite, observed on the 18th, is 78° 27′ 24″, which is about a mile further east than its position in the map. The observation was not, however, very satisfactory, as it happened about 5h. 15m. A. M. when it was broad day-light.

There are quantities of excellent lime-stone in this neighbourhood, and I showed the people how to burn lime, a process which they were quite ignorant of. During my stay here, Putee Ram insisted on bringing me daily, tea prepared after the Tartar fashion. It is made in a pewter tea-pot, in shape exactly similar to ours; and it is stirred about with a split stick, resembling what is used in India for spruce beer. I liked the tea

very much; it tastes like soup: the people here drink it all day; and in their journey, the first occupation they are engaged in after reaching their encamping ground, is to make the tea.

There is a strange custom called Mentike, which prevails through the whole of Koonawur. In the beginning of September all the people who are able to move, leave their villages and ascend the nearest hill. They proceed slowly, and make a circuit, occupying several days, sounding drums and trumpets. They play at all sorts of amusements, run horse and foot races, perform all manner of buffoonery, feats of agility, dance, sing, and drink.

The road from this, viâ Shealkhur to Ludak, crosses over several very lofty ridges; yet it is travelled throughout the whole winter, and is never impassible on account of the snow. I heard such frightful accounts of the severity of the frost, that I was desirous of seeing how the people clothed themselves; and next morning Putee Ram came to me attired in his winter dress. This was a garment of sheep skin with sleeves; the fleecy

side inwards, and the exterior covered over with sooklat (blanket); trowsers of the same, and long woollen stockings; above them boots, with a leather shoe stuffed for two inches with wool; gloves of thick flannel reaching above the elbows. In addition to all this, he had a blanket round his waist, another over his shoulders, and a shawl wrapped about his head and face. Such, he said, was the garb of a traveller in the winter season; and that he himself was always accompanied by a mule-load of blankets, and another dress similar to the above, which were all required at night when they were obliged to repose upon the snow.

The inhabitants of Soongnum speak a language totally different from the Koonawuree and Tartar dialects, the infinitive of verbs ends in *pung* and *bung:* and on my arrival I could not understand a word they said. I collected about 1000 words of the language called Theburskud, and as many of the Tartar and Milchan, which I will send you on my return. There are, to the best of my knowledge, no fewer than five distinct tongues spoken in Koonawur. Many of the words are

common to them all; but they principally differ in the cases of the nouns and tenses of verbs.

Most of the people of Shoong are traders to Ludak, Garoo, and Roodok. They take the produce of the Plains, such as matchlocks, sabres, sugar, tobacco, cloth, chintz, indigo, copper, pewter, paper, iron, grain, spices, &c., and bring back chiefly salt and wool, some gold dust, tea, borax, and shawl-wool. The salt and borax are dug out of lakes, which are numerous in Chinese Tartary and Ludak. The wool called "Beangee," is long, and very fine: the sheep are pastured on the elevated tracts of land near Garoo, and to the eastward of that place. The shawl-wool named "Lena," is well known: it is the produce of goats of the same country.

Garoo is a collection of black tents, and is frequented for eight months of the year. In winter the Tartars retire to Tuzheegung, on the bank of the Eekhung or Eegung Khampa. The greater proportion of the salt is found in the vicinity of Rootho or Roodok, on the right bank of the Indus, a populous place, containing upwards of

300 families. The principal lakes here yielding salt are Gok-Dungcham, Zangchaka, Meendoomchaka, and Chakchaka. Borax is also found in Challechka lake, near Roodok, and in many other places about Garoo, Mapang, and Leh.

All the rivers abound in gold-dust, which is separated by washing the sand in a running stream, and stirring it till all the lighter particles float away. What remains is then dried; and the gold which is often in such fine grains as not to be distinguished by the eye from the sand, is detected by quicksilver, mixing all together, and observing the particles that are tinged with the metal, which is afterwards evaporated by a heat sufficient to dissipate the mercury in fumes. Gold is also found in the ground at Dango-Bookpa, twelve days' journey to the S. E. of Mapang; and very lately a new mine, producing it in large pieces, was discovered between Goongeoo lake and Mansurowur; but it was immediately shut up by orders from Lahassa. The tea is brought from a great distance to the eastward of Garoo, but I could not obtain the name

of the place where it vegetates. Sulphur is found in Ludak at Kolok, Dimzhag and Neooma; some of which places are probably in the map.

I am all prepared for crossing the lofty range of mountains that forms the boundary of Ludak, and shall move to-morrow. My next letter will be from Manes, the frontier village.

I had ten days' supplies ready, and I might have got more grain had I waited longer: I was anxious, however, to set off for Speetee, so I told our friend Putee Ram that I might be detained fifteen or twenty days, by a fall of snow or other circumstances, and I asked his advice; he replied, "Never fear, I'll equip you for a journey of thirty or forty days, and make a real Tartar of you." I told him to be quick, and he said he would have every thing ready in the evening; I doubted his words, but to my surprise he returned about sunset with a large flock of sheep, exclaiming, this is the way we Tartars travel: he bade me dismiss the porters I had to carry the grain, who might return by the route of the Sutluj, where they were sure to be supplied with provisions. I accord-

ingly did so, and he said the plan was to load the sheep with the grain, and when it was finished, the sheep were to be killed and eaten.

Camp Soongnum, August 27, 1821.

CHAPTER XVI.

TOUR IN THE HIMALAYA.

March to Pamachun : great elevation of Birches ; ascend Manerung Pass 18,612 *feet ; horrid road and danger from falling rocks ; laborious respiration and debility ; proceed to Manes the first village of Speetee ; travel to Peenoo ; dangerous rock ; elevation of the villages in Speetee.*

On the 27th of August, after much trouble and loss, I succeeded in boiling a barometrical tube, which by many observations I found to differ only 0.002 from Dollond's.

August 28, 1821.—I moved my camp to Ropa, a distance of four miles. The road was good in the dell along the bank of the Darboong, and I was mounted on a Ghoont. Fields and hamlets are scattered about in the dell, which is embow-

ered by newsa, keloo, (both species of pine) apricot and apple trees. I passed the village of Sheebe, which is occupied by a few Lamas and Nuns; close by it is a copper-mine which has not been worked for many years. Ropa contains twenty families, and is elevated 9800 feet above the sea; consequently the seasons and natural productions are the same as at Soongnum.

August 29.—I proceeded to a resting-place for travellers named Pama-Chun, distant $10\frac{3}{4}$ miles. Commencing with a level road through fields, we soon encountered the usual toils of mountain journeying; and after two miles and a half of pretty steep ascent, we came to a Pass at an elevation of about thirteen thousand four hundred (13,400) feet from the sea. The barometer was 19.512, the temperature of the mercury 79°, and that of the open air 58°. The surrounding hills are slaty, and crumble away at the surface, which is almost naked; stunted pines and arborescent juniper now and then occurring. Just below this the first branches of the Darboong are concentrated: the streams rise in the perpetual snow,

and rush down from different directions in clamour and foam to unite their waters. The next four miles of the road is of a very extraordinary nature; but words want force to make a true impression, and description would appear fictitious. After a series of difficulties and dangers, with much fatigue we descended to a considerable stream and crossing it by a wooden bridge, we proceeded upon a level soil to Soomdo, a few huts occupied by shepherds and their flocks. Hence to Camp, with little variety latterly, in a forest belt of birch trees limited at the verge of 14,000 feet. To-day we passed a copper-mine; and on the opposite bank of the river, facing the Pass, is a very productive one. This was worked a few years ago; but the miner (who was a native of Chumba) after levying a large sum of money from the inhabitants of Ropa, disappeared, and no further progress has been made since.

Pama-Chun is elevated 13,700 feet: it is named after the species of juniper called Pama, which is the only wood for fuel to be found in the vicinity.*

* Pama. Juniperus commmunis, var. nana ?

The birches, although vegetating at greater heights, shrunk from the mass of mountain and the snow that shuts up the dell. The Darboong is here very much reduced in size: the cliffs rise from the water's edge in wild desolate disorder; every year marks them with frailty and decay. Their sharp summits crumble away by unceasing frost, and their steep sides corroded by melting snow, unable to support the increasing weight, break asunder and carry destruction to every thing they meet with, and choak up the stream for a time, which however soon makes a passage till it is again arrested by other masses. In some places we find vast bodies of snow beneath which the river runs concealed for many hundred yards, and even ceases to be heard. As the snow thaws, fragments of rock are disclosed: but such is the bulk of these gelid arches, that the season makes little impression on them before a fresh field is precipitated. I had a large flock of sheep loaded with grain: they carry ten pucka seers (20lb.) each, and to my surprise they arrived at camp before any of the baggage.

The porters straggled in by sunset, others at midnight; and the tent, with a few things, were lost sight of from this time forward. I wished to have stopped at Soomdo, but the guides dreaded bad weather, and were desirous of crossing the chain the following day, as a heavy fall of snow might block up the passage for some days.

August 30.—It rained and snowed a little during the night, and at sun-rise the thermometer was 36°: our clothes were covered with icicles, and I felt symptoms of rheumatism. I marched to Sapona, a resting place for travellers, distance $8\frac{3}{4}$ miles. The first part of the road was good, often narrow and open to the Darboong, which we crossed three times by arches of snow. The mountains are lime-stone of many colours: they project in mural forms, and end in peaked summits of great height. Not a trace of vegetation finds nourishment here; and the snow cannot find a rest, but is hurled down together with the rock itself, and is exhibited at the bottom, in banks and accumulations of a frightful magnitude.

We had now come $2\frac{3}{4}$ miles, and here the dell

was terminated and closed round. The Darboong was lost amongst the fields of snow and ice, by which it was generated; the whole space on every side was floored by ice, half-hid under stones and rubbish. In some places the snow is of an incredible thickness, and lies in heaps. Having accumulated for years together, it separates by its gravity, and spreads wide desolation in its route. No where in all my travels, have I observed such enormous bodies of snow and ice, or altogether such a scene. So rapid and incessant is the progress of destruction here, that piles of stone are erected to guide the traveller; since the path-way is often obliterated in a few days by fresh showers of splinters. Our elevation was now upwards of 15,000 feet, although we had but ascended in company with the river.

Here only began our toils: we scaled the slope of the mountain very slowly; respiration was laborious, and we felt exhausted at every step. The crest of the Pass was not visible, and we saw no limit to our exertions. The road inclined to an angle of 30°. Vast benches of lime-stone, like

marble, were passed under; the projections frowned over us in new and horrid shapes. Our situation was different from any thing we had yet experienced: it cannot be described. Long before we got up, our respiration became hurried and oppressive, and compelled us to sit down every few yards; and then only could we inhale a sufficient supply of air. The least motion was accompanied by debility and mental dejection; and thus we laboured on for two miles. The last half-mile was over the perpetual snow, sinking with the foot from three to twelve inches, the fresh covering of the former night. The direct road leads to the centre of the gap, where the snow is very deep and treacherous: and we made a circuit to the right to avoid the danger of being swallowed up in one of the dark rents into which often shepherds and their flocks have sunk never to rise. The day was cloudy, and a strong wind half froze us. The rocks were falling on all sides, and we narrowly escaped destruction. I, myself, twice saw large blocks of rock pass with dreadful

velocity through the line of people, and between two of them not four feet apart.

At half-past two I reached the summit of the Pass named Manerung; and the two barometers, when adjusted, gave—Dollond 15.300; the tube I boiled at Soongnum 15.270. The temperature of the mercury was 60° in the one, and 52° in the other, and the air was 36°; which answers to an elevation of 18,612 feet. There is a Shugar and a very circumscribed spot free of snow, on a level with the crest, and I would have halted here, had the tent arrived or even been in view; but I was suffering from rheumatism, and thought it advisable to descend to a milder climate. I saw very distinctly the Paralasa range covered with snow; it seemed to run N. 25° E. and S. 25° W. and showed an elevation from 13′ to 15′.

Leaving the Pass we travelled over the snow for a mile, gently descending. The wind blew with great violence and benumbed us; but the sun shone bright, and caused a reflection from the snow that affected our eyes. To save my own I

threw a handkerchief over my face, but often sinking above the knee, I preferred exposing it, in order to look after the security of the feet. None of our eyes were much inflamed; and it was scarcely to be expected, at this season, when the snow is soft and somewhat soiled. In the cold weather, when the snow forms a hard crust, and sparkles like diamonds, the reflection of the sun's rays is very distressing to the eye-sight.

The road, after quitting the grand snow-bed, became extremely rough, leading over the scattered wrecks of the cliffs and patches of melting snow, and along the edge of and across a stream running in a channel of solid ice. We descended with great difficulty over the steep banks of splinters and soil, moistened by subterranean snow. The adjacent ridges are wholly lime-stone, without one tuft of grass or any vestige of vegetation; and, deserted even by the snow, they exhibit an enormous extent of pure rock, and spire into slender summits, assuming a variety of forms which are beyond conception.

We encamped at the foot of the great slope

that stretches from the Pass, where the dell takes a regular shape. The stream spreads out, and ripples upon sand and pebbles: the mountains slant away, and vegetation takes possession of the slopes at their base. The camp, which is a resting-place for travellers, was 15,200 feet above the sea, the Barometer showing 17.270. The sheep arrived on the ground at the same time I did; but before dark only ten loads of baggage came up. Most of the people stopped a short way below the great snow-bed, and some of them were unable to reach the Pass on account of headaches. This day's journey was rather severe for people encumbered with baggage. The length and difficulty of the ascent, the rarity of the atmosphere, and rigours of the climate, even at midsummer, make the passage formidable to the most robust individual.

August 31.—It had snowed at sun-set in the evening before, and this morning the thermometer at sun-rise was 31°. My bed, which was spread upon the ground, was frozen, and I found my eyes swollen, but not very painful. It snowed on the

surrounding mountains during the night, and I became anxious for the people who were missing, and the baggage. I therefore sent back three persons to ascertain the state of the Pass, and to order those who had not crossed to return to Soongnum if the attempt to come on would incur risk. From sleeping upon the frozen ground for two nights, I felt the encroaches of rheumatic pains, and had almost determined to rest here; but the greatest proportion of the rear people arriving by one P. M. I proceeded to Manes, a distance of $6\frac{1}{4}$ miles. The road lay through the dell, upon soil covered with prickly bushes, and we met with fine crops of wild leeks at the height of 15,000 feet. At $3\frac{1}{4}$ miles from camp, latterly by a rapid descent, we came into an open valley, being an expanse of level sand and pebbles. We followed the stream till it merged into a lake, and here leaving it on our right, we descended to Manes, which is $2\frac{1}{4}$ miles further on. This is a large village of fifty houses in two divisions separated by a stream. It is elevated 11,900 feet, and lies on the right bank of the Speetee river, 400 or 500

feet above it. Around the village is some level soil, bearing crops of wheat, barley, and ooa, which do not extend higher than 12,000 feet.

September 1.—I found no person in this village who could read the introductory letter I had received from Putee Ram. I therefore sent it, accompanied by a Khuttuk, to the Kharpon or Governor of Dankur Fort, and requested a verbal answer. In the evening it was returned, accompanied by a Khuttuk, and a message that I might proceed to Peeno, for which purpose he would furnish me with guides. The route by Dankur, although preferable in point of access, was more circuitous than the other; and as there is no bridge to recross to Peeno, and in consequence of the late rain, I foresaw there would be some delay. The Dankur Commandant informed me that his authority over Peeno was purely nominal, and he had no concern with the place beyond receiving the tribute for Ludak. I got observations of the sun and stars for the latitude of my camp at Manes, which gave 32 1′ 57″.

September 2.—I made a journey to Peeno, a

distance of thirteen miles and a quarter. The road was excellent for four miles, keeping along the right bank of the Speetee river a little above the stream; for two miles and a quarter more it lay in the bed of the river, and was equally good, as far as the small village of Solok. The dell is frequently a mile across, and the Speetee winds through it amongst islands of sand and pebbles, which are now forsaken by the water and covered with barberries and other bushes. Dankur fort opposite to this is a considerable building, and like Shealkhur it encloses the houses, in number about forty. The walls of the fort are partly mud and partly stone; there is water within it, and the position amongst rugged projections of gravel appears well chosen. Above the fort the river divides: the largest body of water, which has a Jhoola (bridge of ropes) across it, rises in the Paralasa snowy range on the N. W., and is called either Speetee or Koonjomchoo; the other, also a large stream, is named Peenoo, after the Purgunna through which it flows. It receives many supplies from different quarters, the principal

branches have their sources near Taree pass, on the S. W.

I was here informed of a difficult part of the road that might be avoided if the Peenoo stream was fordable; two people attempted it, but found it impossible to succeed, and we had no choice but to encounter the danger. The road still lay in the bed of the river for one mile and a half; and ascending for another mile, we reached the intricate part. It was truly frightful to the view: in one place there is an inclined notched tree for the passage of a chasm: beyond this there is a line of rocky ledges excavated for the toes to enter: above, are loose crags projecting over the passengers, and beneath is a mural precipice more than one hundred feet deep. Even unloaded people get over with the greatest difficulty; we were consequently under the necessity of lowering down the baggage by ropes,—a very tedious operation. Beyond this we came to an inclined rock one hundred feet high, which we had to climb over; yet although full of asperities and rents, it could scarcely be ascended barefooted, and to save time

and accidents I fixed a rope on the summit and by this we got up. The road continued dangerous for one mile and a half further; thence to Peenoo along the edge of the stream. The dell is between a quarter and half a mile across, and is occupied by sand and pebbles, the river winding through it in several channels. The hills on each side are of blue lime-stone, sharp at their tops but crumbling below.

Peenoo comprises several villages, and is not the name of any individual one. The spot where I encamped, is called Tengdee, and is about 12,000 feet from the level of the sea. The lower half of the walls of the houses are built of stone, and the upper half of unburnt bricks. The roofs are flat; and on them all their fire-wood, which is collected with great labour, is piled up. There are a few fields of ooa, barley, and some pease.

Speetee is a distinct Purgunna, containing about thirty villages, and lies between Busahir, Kooloo, Ludak, and Chinese Tartary. It has occasionally been under the authority of each state; and about fifty-five years ago, Dankur Fort was in the pos-

session of Busahir, for two years. These border districts have frequently been the scene of war; but their contests were neither bloody nor protracted, and resembled the frays amongst the Scottish clans of old times, being confined to the seizure of cattle, and sometimes setting fire to a village. The revenue is now chiefly shared between Ludak and Chinese Tartary; but there is an annual present of thirty punkhees or blankets to Busahir, and as many to Kooloo. There are three Purgunnas, Manes, Peenoo, and Losur, each under charge of an officer who nominally acknowledges the authority of the Kharpon of Dankur. There are lead-mines at Pokh or Pokso, Lara, Leedung, and some other places. They are very productive, but the lead is thought less valuable than that of Sirmoor and Jounsar: it sells at ninety or one hundred sicca weight per rupee.

The country, as far as I could see, has a very desolate aspect: and impresses us with no very favourable idea of the more interior regions of Ludak. The villages of Peenoo are elevated from 12,000 to 12,500 feet above the level of the sea.

Dankur, which was fixed trigonometrically, and its elevation observed from two stations, is almost 13,000 feet; and some of the villages further up the river are probably more. The mountains are all of lime-stone, arid and barren: the only trees met with were a few dwarfish poplars near Manes, but in the vicinity of Peenoo there are no trees of any kind, and the few prickly bushes seldom arrive at the height of three inches. About Losur the country must be even more sterile.

Camp Manes, September 5, 1821.

CHAPTER XVII.

TOUR IN THE HIMALAYA.

Interview with the chief person: his firm determination that I should not proceed: the great attention and politeness of the Tartars: negotiation with the Lafa: Latitudes and Longitudes of Peenoo and Dankur: remarks on Ludak: return to Ropa by Manerung pass: cross Roonung pass 14,000 *feet: proceed to Pungpa viâ Leedung.*

My last letter to you, describing the progress of my Tour, was dated from the camp at Manes, and brought up the detail of my progress to the 2nd of September, from which period I take the present occasion to send you a continuation of the narrative.

September 3.—The chief person of Peenoo, who is styled "Lafa," came to see me, and we ex-

changed Khuttuks, which is an indispensable custom amongst the Tartars in visiting and transmitting letters, whether of courtesy or business. He lives on the opposite side of the river, and was prevented from paying his respects earlier by the state of the ford. I observed people crossing by means of yaks remarkable for their size; but even these seemed to maintain their footing with difficulty.

The Lafa was frank and polite, but determined that I should retrograde by the road I came. He remarked that his allegiance to Kooloo and Ludak was nominal, and the annual tribute they required was a few blankets and some wool. He was entirely under the control of the Chinese at Tooling or Ling, a large town two koss S. W. of Chubrung, inhabited by Geloopa Lamas; where also there is a celebrated temple with a gilt cupola roof. Tooling is situate on the left bank of the Sutluj, and under it is a chain-bridge across the river called Chukh-zum. The first syllable of this word signifies "iron," the last "bridge." I was desirous of following up the Peenoo route and

crossing the snowy chain by the Pass to Wangpo, which faces that of Shatool in the opposite range. This would bring me upon the Sutluj at the Wangtoo bridge of ropes, and save me a long circuit and much inconvenience and fatigue. These and other persuasive arguments were urged to gain this desirable point; but to no purpose. He said that he had no power to dispute the passage, should I resolve on making it; but he would do his duty by detaching people to different points of the road who would repeat his orders.

September 3 and 4.—I was confined to my bed for most part of the day with rheumatism; but managed to take observations for the latitude, longitude, and time,

The Tartars of Speetee are the finest fellows I ever met with; more familiar than those of Bekhur or Shipke, without being in any degree intrusive. I conversed with them all day; but they never remained with me when I wished to get rid of them, and always departed apparently much pleased. On learning that I was unwell, each seemed desirous of affording me some little

assistance, and brought a variety of medicines, beside ghee, nerbissee, and tea. Their kindness, however, became troublesome, although the intention was good.

The people are stoutly made, well-favoured, and many of them are handsome. They dress comfortably in black blankets: the outer garment resembles our great coat. They make use of the same sort of smoking apparatus as the Chinese: a piece of quartz serves for a flint, and a flower that flourishes near the perpetual snow supplies the place of a match, to which it is even preferable from its facility of lighting. They all wear boots of two colours. The head-dress in Manes, is generally a hat of yellow cloth, fringed with red worsted; but the inhabitants of Peeno have all black woollen bonnets, not unlike those of the Scottish Highlanders.

The language here differs nothing from that spoken in the higher parts of Koonawur, and which is the common dialect as far as Teshoo Loomboo and Lahassa, and over the whole of Ludak; but westward of this tract there is a

jargon of Tartar, Hindee, Persian, Pooshtoo, and Kashmerian, strangely mixed together. Towards Yarkund it becomes corrupted with Toorkee (Turkish) a language spoken in that country. The natives and residents of Speetee herd great droves of horses, yaks, sheep, and goats, which are their chief support; all the land capable of cultivation not yielding sustenance for the one half of them; yet part of the grain is exported to Leh and Koonawur. The wool is remarkably fine; that of the sheep is very soft, and the blankets made of it are warm and substantial. It is only the inner coat of the goat's fleece which furnishes the shawl-wool, and this is equally as fine here as at Garoo, but much less in quantity. The inhabitants of Speetee trade pretty extensively with their neighbours on the other side of this great snowy range in the valley of the Sutluj. The exports are wool, blankets, borax, lead, and salt: and they receive in return the produce of the plains and a great deal of iron. Speetee borders upon Lahoul of Kooloo, and is separated from it by the Paralasa range.

During the two days I stopped here, I was negotiating with the Lafa for the greatest part of the time, for permission to pursue the route by the Taree Pass to Wangpo; and with the view of inducing him to a compliance, which notwithstanding all he had said I still thought he might be empowered to grant, I sent a present, first of some coarse shawls. In return, I received a couple of sheep: afterwards at different times, dates, sugar, and tobacco were sent, and were politely acknowledged by a present of ghee and flour, a khuttuk accompanying the presents each time to ensure their acceptance. Finally I sent him 150 rupees, which were not received, although he kept the khuttuk. This correspondence was disadvantageous to me, as the scarfs I purchased for this ceremony cost two or three rupees each, and those I received in return were of very inferior value.

On the evening of the 4th, the Lafa again visited me, and we exchanged silk scarfs as before. He assured me that his order against the intrusion of foreigners could not be infringed; and that

no lucrative incitement, however great, would have any effect upon his resolution. I was much disappointed; yet I gave him credit for his conduct, and admired the decided but civil manner of his address. He made an excuse for the inferiority of his khuttuks, and expressed himself sorry to hear of my indisposition, but intimated that I might remain here until I recovered, when he would facilitate my return by the road I had come. On taking leave he presented me with a couple of blankets; I gave him a coarse shawl, and thus we parted on friendly terms.

This trip has not added much to our geographical knowledge: Manes, Peenoo, and Dankur, formerly fixed on the report of the natives and laid down in the map, agree very nearly with their positions as now determined. The route is notwithstanding of great importance, as it verifies the accuracy of the statements given by the Koonawurees, and that they may consequently be relied upon to greater extent as to remoter objects; which gives me much confidence in my position of Leh the capital of Ludak.

The longitude of my Camp at Peenoo, by an immersion of Jupiter's 1st satellite on the 3rd, is 78° 7′ 5″. which agrees very well with the observation I got at Soongnum; the Chronometer giving the difference of longitude between these two places 21 miles. The following is a comparison of the positions laid down by information long ago, with those now practically determined, reckoning from Soongnum. The lat. of Manes 1′ too low, long. 45″ too far West; Dankur 2′ 30″ higher in latitude than it appears to be, and 3′ too far West; the longitude of Peenoo is within half a mile of the truth, the latitude is nearly 3′ minus. This is pretty well, considering that the distances were computed by the day's journey. In short spaces, such as from Manes and Peenoo to Dankur, it is not to be expected that we can approximate very closely, as the stages will differ in length: but in great intervals, as from Sheakhur to Leh, the medium distance of a day's journey which I have taken at eight miles in a direct line will err little from the truth. I may here observe that from Manes to Peenoo was represented as a long

march; but as the road made a considerable bend, I laid down the horizontal distance only $7\frac{1}{4}$ miles. The Chronometer makes the difference of longitude 7 miles, and, as the direction is almost due West, the horizontal distance must be nearly correct. The highest latitude I attained was close upon the parallel of Dankur; and by observations of the sun's meridian altitude, with Troughton's reflecting circle, it came out 32° 5′ 34″.

As I am now on the frontier I may say a few words about Ludak: the country is very mountainous, and occupies a great extent on both banks of the Sing-Zhing-Khampa, or Indus river: it is bounded on the North by Yarkund, and its dependencies; on the East and South East by Chinese Tartary; on the South by Speetee; on the South West it comes in contact with Lahoul of Kooloo; and to the West it borders on part of Chumba and Kashmer.—It contains many Purgunnas, one of which, Chooshat, is almost wholly inhabited by Moosulmans called Byltæ, who have been settled there for many years. The hills are of a crumbling gravelly nature, and seldom shoot

into peaks; and by the description of travellers, I conclude they are composed of limestone. The whole tract is arid and almost without foliage; the few bushes that vegetate are of a prickly sort. The streams are few and scantily supplied; and the evaporation from the earth is consequently so much diminished, that neither periodical rains nor heavy falls of snow occur in that country. Rain is indeed said to be rare, and the snow falls so lightly that the highest mountains might be passed in winter, were it not that the severity of the frost, which prevails under the clear sky of those regions, is made more keenly sensible to the traveller from the dearth of fire wood.

At the villages there are generally some poplar trees, and in the vicinity of Leh on the banks of the Indus are apples and apricots. In many places especially Roogshoo, or Roopshoo, the ground is too elevated for the purposes of agriculture, and no villages occur for several days. In the summer season we meet with encampments of Tartar Shepherds, with their tents and flocks of yaks,

goats, sheep, and horses; but in winter all is a desolate and dreary waste.

The capital Leh is situate on the right bank of the Indus, two or three miles from the stream, and contains nearly 1000 well-built houses. The Rajah, styled by the Tartars "Geapo," or "Gealboo," is named "Tondook Numgeal," and occupies a handsome palace. Some Hindoo and Mahomedan shopkeepers reside in Leh, but the mass of the inhabitants are Tartars. The grain crops in Ludak, are ooa, wheat, barley, and phapur, together with pease, beans, and turnips. Flesh forms a large proportion of the subsistence of the people, and bullocks, yaks, sheep, goats, and horses are eaten.

Sept. 5—I returned to Manes. The Lafa provided me with guides, and sent four of his people to see me safe beyond the difficult part of the road. Ropes were used as before, and the baggage was not up till an hour after dark.

Sept. 6.—I removed the Camp to Sopona, the place we stopped at after crossing the range; and passed the night as before on tentless ground.

Sept. 7.—I proceeded to Soomdo, a distance of ten miles and a half. Although I was stirring before 5 hours 30 minutes, A. M., the camp was not in motion till eight o'clock, at which time the thermometer was still 27°, not having risen since sun-rise. I reached the Pass by half-past eleven, and the barometer then gave 15.294, temperature of the mercury 58°, and that of the air 28°. The snow had not descended above 400 feet since I first crossed; but the great field of ages had a new and deep covering, all frozen so hard as not to sink half an inch with the foot. Shortly after leaving the Pass it came on to snow, and continued to do so till we arrived at our former encampment at Pama-Chun. The lowest descent at which it lay was about 14,500 feet; but this only occurred upon the old snow-beds, and what fell on the ground melted off at 16,000 feet. To-day's journey was much less fatiguing than the ascent from this side; the perpendicular elevation and angle of the slope inferior, and the baggage was up by 5 P. M. The Darboong was only half its former size; a few days had brought back winter, and the stream

was now but slowly generated by the ice. Soomdo is about 13,500 feet high, the barometer keeping a medium of 19.100.

Sept. 8.—The thermometer at sun-rise was 40°. I proceeded to Ropa, a distance of eight miles and three quarters.

Sept. 9.—I made a march of five miles and three quarters, and encamped at an elevation of 13,500 feet, near a rivulet. We retraced our steps for two miles and a half, and crossed the Darboong, under the village of Geaboong, which consists of twenty families of Dookpa Lamas, and lies upon the right bank of the stream. Hence to camp was an ascent upon the face of a hill, thinly wooded. The upper limit of the keloo and ree (newsa) of the pine species, in this neighbourhood, is about 12,300 feet; the barometer giving 19.205, temperature of the mercury 89° and that of the air 73°. The shookpa juniper extends fifty or sixty feet higher. My camp was a mile from any kind of fire-wood; but the spot afforded water, which the more comfortable situations were without.

Sept. 10. At sun-rise the thermometer was 39°; water froze hard during the night; and every thing was covered over with icicles. I marched to Leedung, or Leepe, a distance of eleven miles and a half. From the elevation of 13,500 feet the ascent still continued for two miles and a half to Roonung Pass, where the barometer shewed 17.846, temperature of the mercury 60° and that of the air 50°; which will give nearly the same result as we obtained before, or 14,500 feet. The mountains are now of clay slate; and the creeping juniper, as if it had found a congenial soil, spreads its roots higher than the Pass.

We now descended from this zone of frost for $2\frac{3}{4}$ miles by a good road slightly sloped. Hence for three miles upon an undulated tract much indented, but preserving a height above the limit of the trees, and leaving the populous villages of Kanum and Lubrung at a profound depth on our left, we hurried over the parched face of the hills and descended into the dell. Leepe is a large village in Zhungram of Shooung, and has three

divisions, the whole containing forty families. The site is tranquil and retired in the dell of a considerable stream, lying along the left bank. The houses are built of the Keloo fir, in the form of water cisterns, very small and compact. Although in the bottom of the dell, the village stands 8700 feet above the sea, the vine is cultivated upon a southern exposure, and there are orchards all around. A few of the grapes are now ripe; and the apples, which are the largest I have remarked in Koonawur, are well tasted. They are scarcely come to maturity, but they make an excellent dumpling. From this, along the bank or gorge of the Pejur, the mountains are crossed by a Pass into Speetee, which loaded horses and yaks can travel with ease. The crest is very elevated, but the approach is not impeded by precipitous points; yet there has been no communication by this route for the last fifty years. Formerly, at a period of war between Busahir and Speetee, the facility of access favoured inroads to plunder; the villages near the Pass on both sides of the boundary were deserted for many years;

and on the return of peace it was mutually agreed on, that in future, nobody should frequent this road, which compact has been strictly observed.

September 11.—I proceeded to Pungpa or Pungee, distant 12¾ miles. Crossing the stream by sangos under the village, we had a continued ascent for five miles to the ridge of the mountains; where the Werang Pass brought us into the valley of the Sutluj. The forest became more dense and flourishing, proportionally as we retire from the arid skies of the interior: keloo and kyl firs occupy the lower zones*; birches and rhododendron succeed, and are generally the last to give in to the rigours of the climate. The highest limit of the birch was observed at 19.100 of the barometer, or 12,500 feet; the keloo ceases to appear about 400 feet below this, and the rhododendron overtops both by 200 feet. Werang Pass is fully 13,000 feet high; the barometer standing at 18.764, temperature of the mercury 63°, and that of the air 54°.

From the crest I had a view of Leepe and Pungee, but no distant objects were visible; the

* Kyl. Pinus excelsa?

clouds hanging upon the mountains. We now descended finally into a milder climate. The road was broken by massive ruins of granite, and the heat was oppressive. We ascended and descended, made zigzag turns, and got over the hard disordered face of the country by $1\frac{1}{2}$ miles of steep, slippery, and intricate descent to the Kashung, a large torrent derived from the perpetual snow. It dashes on a bed of detached rocks with the noise of thunder, and passes into foam. We crossed it by a good wooden bridge, and ascended gently to camp.

CHAPTER XVIII.

TOUR IN THE HIMALAYA.

Proceed to Rogee along the valley of the Sutluj; Vineyards; Rugged Roads; Ree or Neoza Pine; Valley of the Buspa: Enumeration of the Passes from Busahir through the great outer Himalayan Chain; Travel on to Nunganeo, via Meerting and Tholang; Bears and Bees: Cross Sutluj, at Wangtoo, by a rope bridge.

I WROTE you last from Pungee on my return from the Himalaya, and entrance into the humid atmosphere of a warmer climate. I now resume the continuation of my narrative:—

September 12.—I this day marched to Rogee, a distance of nine miles. We crossed the Mulgoon, a rapid mountain-torrent, passing into the Sutluj. The stream is broken by masses of rock, and two sangos of slight construction are thrown over it.

We now entered a pine forest, and continued for five miles to tread upon black soil, studded with deodars of amazing height: having on the left towards the Sutluj, a belt of land highly cultivated, interspersed with orchards and the richest vineyards. In the midst of these is Cheenee, a large village, contiguous to which are seven or eight others. The soil slopes gently to the Sutluj for two miles, and is loaded with fine crops. This is the only comparative level slip of such extent in all Koonawur, and forms a striking contrast with the heavy woods and rocky cliffs that overhang it.

Here, as well as opposite to this across the river, the grapes attain the greatest perfection: part of them are dried in the sun upon the tops of the houses, part eaten in a ripe state, and the rest made into spirits. These are of two kinds; one named *shoo*, is not a bad approach to raisin wine; the other, called *rakh*, tastes a little like gin, and is very strong. There are no fewer than eighteen different species of vine cultivated in Koonawur, which have separate names derived from the colour, shape, size, and flavour. The

vineyards are laid out in the form of arbours, with a latticed roof supported on posts. At this, which is the season of their fullest verdure, they afford a delightful screen from the fierce rays of the sun, and the heavy bunches of grapes depend over the repose in rich profusion. Each vineyard is guarded by several large growling dogs of woolly fleece, trained for the purpose; which, together with the villagers, keep watch all night, and by their perpetual bellowing, endeavour to preserve their gardens from the inroads of the black bears.

In the woods hereabouts, there are a few white bears which live near the snow and seldom approach the villages. I once saw two of them: they have no resemblance to the Lapland breed, and are like the others in all but colour.

From Cheenee the road assumes a very rugged feature. The trees are thinned by the ruins of avalanches. Many rude balconies, flights of steps, and notched spars occur: and after crossing a small stream, we ascended a steep face clothed in forests of waving pine, springing from a black soil crowded with countless varieties of gay

flowers and many oderiferous plants. Of these the zeera or cummin is highly aromatic; and the seeds are exported to the Plains, and sold at a high price.*

The height of this spot is 10,200 feet, and one looks down upon the Sutluj rolling in an abyss 4000 feet underneath, and appearing nearly in the same perpendicular plane: so dreadful and vast is the cliff as may be conceived by the horizontal distance not exceeding a mile. The rocks are granite and are formed into a succession of mural precipices, in some nooks of which a solitary tree has escaped the crash. The path skirts along the edges of the abyss and is made with great difficulty: the head grows giddy at the sight, and the traveller feels his courage forsake him. We passed in safety, and descended to camp at Rogee, a small village of five or six houses, 9100 feet above the surface of the sea. Near the level of the Sutluj there are here a few vineyards and some apricots, peaches, and apples: the latter are fine flavoured and large.

* Zeera or Cummin. Cuminum Cyminum.

September 13.—I proceeded to Meeroo, or Meerting, a distance of eight and a half miles. The road ascends to the height of 10,900 feet, passing through a straggling forest of keloo (deodar) kyl and newsa; three species of pine. The last is the same as that mentioned by Mr. Elphinstone by the name of Chilgooza. The cone is large, and the seeds in taste and shape resemble the pistachio nut. This pine does not thrive where the periodical rains prevail. Its limits appear to be between 5500 and 10,800 feet of absolute elevation. It is not to be found below or westward of Wangtoo; and although the tree has been planted near Sooran, it has never borne fruit.

The road rises and falls upon sharp pointed rocks, and now and then a flight of steps occurs. Three and a half miles distance from camp brings us opposite to the Buspa formerly mentioned, descending from an elevated ridge of the Himalaya which is traversed to Neilung. Its waters unite with those of the Sutluj, and make a very considerable accession to this far-travelled river.

From the extreme height of the road in this day's journey, we descended precipitously for a perpendicular distance of 2600 feet, to a small stream. The face of the hill was unwooded, but beautifully diversified with wild flowers and clothed with rich pasture for thousands of sheep. Hence to camp was by a bad road, full of rocky projections, often difficult, and sometimes dangerous. A few of the Newsa pines occur, but they decline in vigour; and after a few miles further down the dell they vanish.

Meeroo contains fifteen houses, and stands 8550 feet above the sea. It is situated in the Purgunna of Rasgramee, which was formerly under charge of a Thakoor, or independent chief, who resided at Brooang. Rasgramee lies on both banks of the Sutluj, and has two divisions, which are only known by the names of Oorlee and Purlee, meaning this and that side of the river.

Although rather out of place here, I shall say a few words about the Valley of the Buspa, which seeing that river to-day brought to my recollection; for when I wrote you from Sungla and Chitkool,

I was too ill of a cold to be able to do much. I shall likewise enumerate the Passes from Busahir to the southward, since I may better employ myself half an hour in this way, than be idle.

The Valley of the Buspa belongs to the purgunna of Tookpa, which extends along the left bank of the Sutluj, and has four divisions, Reedung, Tanglekus, Sgeenam and Kumroo. The three first are called Bheeturee, and the last Bahuree-Tookpa; the latter two portions are separated by a spur of the great Ruldung, or Kylas mountains, which rise in a variety of fantastic forms to the height of 21,000 feet. The Kumroo division includes the Buspa; it contains several villages, and the Castle of Kumroo, a place reckoned of considerable consequence from the respect paid to a very sacred temple dedicated to Budreenath, and crowned by a ball of pure gold said to weigh fifteen or twenty pounds.

Sungla, the chief place, although consisting of no more than forty houses, is of great note; it is situate at the base of the outer range of the Himalaya, and from it, roads lead across the Passes to

the S. E. South and S. W., no less than twelve in number; besides one to Chinese Tartary, and two to the interior on the north; the southern Passes lead to the upper parts of Gurhwal, and different portions of Busahir; I believe I mentioned before that all articles from the Plains were imported to Sungla, and the exports were principally salt, a little borax, and some wool.

The Passes to the S. E. and South, to Gurhwal, are Sugla or Booras, Kimleea, Seenga, Marja, Lumbeea, Barga and Nulgoon; these are from 15,000 to 17,000 feet; those to Busahir on the S. W. are Roopeen, Ghoosool, Goonas, Neebrung and Boorendo, from 15,000 to 16,000 feet.

The salt, borax, and wool, come from Stango, Bekhur, and Chungsa, in Chinese Tartary; the traders repair to those places by different roads according to the season; in favourable weather they proceed up the dell of the Buspa to Chungsa or Neilung, or by Chitkool and Koono to Stango or Sango; but in the rains they frequently make a circuit viâ Harung Ghat, Murung and Nisung, to Bekhur. As I have mentioned so many Passes, I shall give

the rest to the westward of the Valley of the Buspa, which are Yoosoo, Soondroo and Shatool; these are all from Busahir to the S. E. South and S. W., which may be reckoned to cross the snowy chain. West of Shatool towards the point where the Sutluj cuts the range, are Jalsoo, Khealig, and Soongree, inferior to the others in altitude.

Sept. 14.—I proceeded to Chegaon or Tholang, a distance of five miles and a quarter. Leaving the village of Meeroo, we descended by a very rocky road one mile to the bed of the Yoola, a considerable stream rising in the snow, and falling into the Sutluj. The point at which it is crossed is 1200 feet perpendicularly under the village. Along the banks are many fertile fields. Further up are several shurns or dogrees, inhabited by shepherds and their flocks, for half the year. The people live in huts, and are regularly relieved from the villages; and during their residence in these delightful spots, their only occupation is making ghee, and tending the flocks. The general elevation of these cottages is from 10,000 to 12,000 feet, and many of them are very romantic.

One may conceive the beauty of a sequestered glen presenting a carpet of the sweetest smelling flowers intermixed with many varieties of thyme and other aromatic shrubs, shut in by huge cliffs on either side, some of them of bare granite frowning in awful magnificence over the peaceful herds, and threatening them with destruction, others crowned with everlasting snow rising in the wildest forms which the most fantastic imagination could conceive. Lower down are belts of evergreen pine, interspersed with the dark-coloured shade of the oak and holly. And above all is seen the yellow birch and rhododendron with its delicate pink flowers. These are the last trees we meet with in approaching the snow. The climate of these situations is pleasant in summer, and the productions are those of our high latitudes. The strawberry, raspberry, and black currant grow there in perfection upon the verdant banks of the transparent streams of liquid snow.

From the Yoola, the road ascends through a wood of oak and holly, which gives cover to several species of pheasants of the most gaudy plumage.

We passed a small village named Oornee, and travelled over rough masses of gneiss leaning over us, and along the edge of frightful precipices with scarcely a tree to weaken the effect.

To-day I saw several places where the ground was torn up by bears, in search of the honey of the field-bee, which is common at this height and situation. The hive-bee, such as we find in Europe, is also a native of this part of the interior; but they are less numerous than in the tracts bordering on the Plains: they are lodged in apertures in the walls of the houses, and the honey is procured without destroying the bees, as they are smoked out with burnt straw; a far more rational operation than the barbarous method in use amongst more civilized people. About half the honey only is generally taken away; consequently the bees return to the rest. In elevated villages the honey is collected once a year, but in milder climates both in Spring and Autumn: the latter season produces the finest quality.

Tholang contains 55 families, and is 7300 feet above the sea. It is agreeably situate on both

sides of a rivulet, and has seven divisions; Yashung, Darmaling, Rangmee, Sgeentong, Hoorkaning, Chainee, and Yongpaling. There are several Deotas here. They are to be found in every village of Koonawur. The temples are well built; generally higher than any of the houses; and are visible from a distance. Many different kinds of deer, including the musk, frequent these places, and they are killed and eaten, and the horns nailed in pairs on the outside of the temples. The other wild beasts are leopards, panthers, and a small animal of the size of a dog called "changkoo" and "mangsa." The latter go in flocks, and carry off cattle; but never attack men. Hawks are caught in Toopka, and are sold at Rampoor at 60 and 100 rupees each.

The Rajah of Busahir resided there, during the period when the Gorkhas had possession of the country. Opposite to this is the village of Zhanee, near which was decided the last battle between the Koonawurees and Gorkhas. The advanced guard of the latter, which was only engaged, was partially defeated, and the Koonawurees then re-

treated across the Sutluj. When peace was concluded, the Gorkhas retired to Sooran, and never afterwards entered Koonawur, but received the tribute which was regularly paid.

September 15.—I marched to Nunganeo, distant ten and a half miles. Shortly after leaving Chegaon, the road passes under a natural arch of granite, formed by the contact of two immense blocks. We now continued along the bank of the Sutluj, a little elevated above it, and frequently descending to the edge of the stream, which is very rapid; the rocks on both sides are worn into many caves by the action of the water, and these re-echo the roar of the river with tenfold noise. When we had proceeded five miles, we encountered a very dangerous ascent along the scarped face of the rocks. Smooth ledges of granite inclined very steeply to the Sutluj; in which the niches for support scarce admitted half the foot, and were placed at very inconvenient distances.

Having arrived at the summit of the road, we descended again into an abyss of 1200 feet below it, and the distance being only half a mile, will

suffice to show the nature of the slope. The Wangur, a mountain-torrent, here tears its way amongst vast masses of granite, with frightful velocity and clamour. The cascades formed by the rocks in its bed throw up the spray to a great height, which bathes the impending crags, clothing them in the rankest foliage.

In the dell formed by this dreadful torrent, lies in seclusion the small Purgunna of Wangpo, containing only seven villages. This district, like the others in the vicinity, was formerly ruled by a petty chief. The Wangur has a double source: one stream called Soorch, rises from indissoluble snow: the other, which retains the common name, proceeds from the foot of the Taree Pass, which leads to Speetee. Peenoo is about four marches from Wangpo, and it will be recollected, that I made many solicitations with the Lafa of that place, to return by this route. The Pass is not reckoned by the natives so high as that between Soongnum and Manes; and it is probably not above 17,000 feet. The road is good and practicable, for loaded horses, mules, and asses.

After crossing the Wangur by a wooden bridge, we continued upon the edge of the Sutluj for half a mile to Wangtoo, where there is a bridge of ropes across the river. It consists of several thick grass cables, on which is hung a piece of hollow tree secured by transverse sticks. From this are suspended two or three double ropes which serve as a seat for passengers, and also form a receptacle for baggage.

The bed of the Sutluj is here 5200 feet above the sea: the barometer showing 25·102, the temperature of the Mercury and of the air 65° and that of the river 56½. The breadth within the banks which are solid granite, is 92 feet; but this is the narrowest point, and the medium is between 250 and 300 feet.

Just above the rope bridge, are the remains of a sango or wooden bridge, like that described by Turner. It was destroyed on the Gorkha invasion after the Rajah fled to Chegaon.

The jhoola or rope bridge is a very tedious mode of transporting baggage; and in the cold season, when the river is small, a temporary pas-

sage is constructed a short way from this up the river, where masses of rock are scattered in the channel. It consists of a few spars laid upon the rocks, without any security, and being oftener below water than above, it acquires a smooth surface, from which the fabric often slips, and the unfortunate traveller is precipitated into eternity. I stopped in a large natural cave till three o'clock, and saw all the baggage crossed in safety, and then proceeded to Camp at Nunganeo, three and a half miles further. The ascent for half the distance is very steep and rugged; after which we passed along a well-cultivated hill face, till we came to our ground.

To-day's journey was troublesome and fatiguing. It rained slightly till we crossed the Sutluj, and it then poured down in torrents till night. In the interior parts of Koonawur, there is no regular rainy season: and when the whole of Hindoostan, as far as the summits of the Himalaya Mountains, is deluged for three or four months, there are only occasional light showers in the tracts eastward of Wangtoo.

Camp Nunganeo, September 15, 1821.

CHAPTER XIX.

END OF THE HIMALAYAN TOUR.

Shatool Pass: Narwur; Iron Mines: Journey to Sooran; Bheema Khalee's Temple: Human Sacrifices: Rajah of Busahir; detention by a Sango being washed away: Arrival at Rampoor, the capital of Busahir; Remarks on Kooloo; Reach Nirtnugur; A ceremony performed there in honour of a Deota; Description of a similar one at Dulas in Kooloo visited by me in 1820; *Arrive at Kotgurh; and end of the Journey.*

THE village of Nunganeo, from which my last letter was dated, is in the Purgunna of Uthara Bees, lying on the left bank of the Sutluj, and containing four divisions; viz. Buree, Turanda, Nachar, and Grosnam. My camp was here at the height of 6900 feet: opposite to it across the Sutluj is a hot well.

In this Purgunna a few grapes are cultivated,

but they seldom ripen. The rainy season, which begins to be very severely felt here, retards their growth; and a species of worm destroys the leaves. Pear-trees, bearing a large and well-tasted fruit, are abundant near the villages.

From Uthara Bees there is a communication with Chooara, by the Shatool Pass before described. It is reckoned by the people of the country far more lofty than Boorendo; but the difference of elevation is only 450 feet, and its height above the level of the sea is 15,555 feet. It is not surprising that a few hundred feet should create a belief of a much greater altitude, since their ideas are formed upon local circumstances, such as the distance of the ascent, absence of trees, and quantity of snow, added to the difference of level from which they set out. In crossing by the Shatool, no fire-wood is met with for thirteen miles; while at Boorendo the distance is about seven miles, and the snow in the former covers a much greater extent of ground, and lies in deeper accumulations.

The Shatool Pass, although environed by dan-

ger, has been oftener visited by European travellers than any of the others in the Himalaya. Many and various are the circumstances and misfortunes that have attended each adventurer; but it is out of place to mention them here, and I shall only remark that having twice crossed the range by this route, I experienced quite enough of misery to convince me of the more unfortunate situation of others. I was here in 1816, when a dead body was found. Many are the accidents that occur in this passage; but the most direful do not afford sufficient checks to prevent future adventure. My brother James, who crossed it in September, lost two of his people; neither was this owing to any unexpected danger from the depth or frailty of the snow. Necessity made them face the storm, but such was the keen fury of the drifting snow, that they were absolutely frozen to death at mid-day. James and a single guide succeeded, at imminent peril, in crossing over: the former lost shoes and stockings while sinking to the thighs in the snow at every step, his legs and feet soon became torpid; but

the vital importance of pushing on to the nearest village, over sharp rocks, for ten miles, perhaps saved both.

In September, 1817, I ascended by this Pass, and was fortunate in getting an observation of the barometer in the crest. The tube was only twenty inches in length, and it being the first I had ever handled, or that was carried into this quarter of the hills, the risk of boiling the mercury was not incurred. But any approximation is better than none at all; and however scrupulous the notions of others are in the rejection of such means, it is an established fact, that the foregoing observation only differs 150 feet from the results subsequently obtained; and the error was there too little.

The descent from the Shatool on the hither (Indian) side, brings us into Chooara, which is one of the most fertile districts in all Busahir. It includes the southern face of the Himalaya, lying upon both banks of the Pabur: a fine stream rising by three main sources in the snow; the Undretee from Shatool, the Seepon from

Yoosoo, and Pabur from Boorendo Passes. Chooara or Choaroo takes its name from a species of red rice abundantly cultivated on the banks of all the large streams. There are five Nalees or great divisions in Chooara; viz. Soopoel, Teekral, Runser, Joogao, and Sheelodes. These are subdivided into many lesser irregular portions, variously denominated, which long ago were under petty chiefs.

With the exception of Teekral, which lies in the extremity of the valley, the banks of the Pabur open out and are highly cultivated. The fields are larger and the land more level than we generally find so near the snowy sources of rivers. The bottom of the valley is here from 5000 to 5500 feet above the level of the sea; but being shut on one side by the lofty Himalaya, and on the other by elevated mountains, its situation is favourable for the maturity of the low-country grains. Rice constitutes the chief food of the inhabitants, and the produce much exceeds the consumption. The surplus is carried into Koo-

nawur, and is exchanged for wool and salt, or to Nawur, where iron is received in return.

Teekral lies near the source of the Pabur, in the heart of stupendous mountains. It is a savage and inhospitable tract, affording bare sustenance for its scanty but uncontrolled population. The character of the natives here, and in the other high villages near Shatool, is warlike and ferocious; and only a few years ago they opposed the authority of Busahir in every point, but particularly in the collection of the revenue, which was only obtained by the presence of an armed force. They were formerly much given to plunder, and had perpetual contentions with the people of the adjoining districts. They have now left off their old predatory habits, under the arm of British power; but they pay tribute unwillingly, and resent former injuries to this day: neither eating nor drinking with their neighbours who were successful against them in war. This race of people are marked with independence, and wear strong features of savage life. Their head-

dress is a high peaked conical cap of brown woollen manufacture, peculiar to themselves. They are all hunters; and are very expert at striking a mark. Their only arms are long bamboo bows and arrows pointed with iron, of various shapes; some of them barbed, but more commonly of a spear form. In war they tip the arrow with bone, which they affirm is a substitute for poison, being made so slender as to break in the substance pierced. The wound thus produced swells so suddenly that the bone cannot be extracted, and death generally follows. These wild people have lately turned their thoughts to trade, and are the principal carriers of merchandise from Chooara to Koonawur, They take up a considerable quantity of iron, which is supplied from Nawur, a Purgunna of Busahir.

Nawur is divided into six portions, which like the other Purgunnas hereabouts were formerly in charge of petty chieftains. Beernoo is the iron district, and the houses there are large and well built, with slated Chinese roofs. The villages are from 6000 to 8500 feet above the level of the

sea. The country produces little grain; but the people are in comfortable circumstances, and gain their subsistence by their trade in iron.

The mines are worked mostly in the cold season for five or six months. At other times it is unsafe, on account of the ground falling in. They are dug horizontally into the side of a mountain; and some of them extend more than half a mile under the surface. There are no perpendicular shafts, and they are quite dark inside. The galleries are from three to four feet wide, and the miners carry with them a piece of lighted fir. The ore is a soft sort of sand-stone containing shining metallic particles like mica. It is dug with a pick-axe and crumbles to pieces. It is then washed and stirred in a running stream until all the earthy particles are carried away. What remains is called Daee, and resembles iron filings, but sparkles more. It is then smelted in an earthern furnace, named Koondee, about four feet high and one and a half in diameter, wider at the top and bottom than in the middle, and shaped like a long table-shade. The bottom of the

Koondee is separate, and is broken every time the iron is taken out. It is made of pounded charcoal and clay, mixed and burnt hard. It is about three inches thick in the middle, decreasing towards the edges. One side is convex, and has fifteen or twenty holes made with the finger half through; the other side is plain. It is fixed into the Koondee with clay, the convex side being placed downwards. Two pair of bellows are attached to the lower part of the furnace, which is filled with alternate layers of charcoal, and iron filings. They keep blowing the bellows and adding more charcoal and iron filings as the fire sinks. Every now and then a hole is driven through the bottom with an iron rod two and a half feet long, and the refuse of the metal runs out in a stream of liquid fire.

It would appear, from the circumstance of much charcoal being mixed with it, that the refuse is light and easily melted; and the blacksmiths say that the iron collects at the bottom in the form of paste, and is prevented from running through the holes, but the dregs swim above; and

the metal requires to be pierced by the rod to allow them to escape. When a sufficient quantity of iron is collected, it is allowed to cool, and is taken out by breaking the bottom. From eight to ten seer of iron is obtained at once; and it is hammered together without much trouble into pieces of five and six seer, in which state it is sold. The blacksmiths work day and night, and get from thirty to forty seers of iron from one furnace in the twenty-four hours. From the ore, as taken out of the mines, there is obtained about one-half Daee or iron filings, which, when smelted, produces from one third to a half of iron; and two thirds of the latter are lost in working it up for use. There are no regular miners in Nawur, the labour being all performed by the zumeendars, (cultivators.)

Iron sells in Nawur for about twelve seer per rupee. The Busahir people only levy three quarters of an anna upon each load, which contains from forty to fifty seers, or nearly one cwt., which is an astonishing quantity to be carried on the back over the most rugged parts of the moun-

tains. Many duties are levied on the iron by the chiefs of the states through which it passes; and this added to the carriage, more than doubles the price before it reaches the Plains. The grain or cash realized by the sale of the iron is divided into four equal portions, and shared amongst the workmen; one goes to the people who labour in the mines, two for the makers of charcoal, and one goes to the blacksmiths who smelt the iron. The charcoal is usually made of different species of pine, such as cheer, kyl, and keloo; but oak is also occasionally used.* It is burned in the neighbouring forests several miles from the villages.

The best iron is found near the village of Sheel, in the adjoining Purgunna of Kootlaha, also belonging to Busahir. The iron is dearer than that of Nawur, and is particularly valued for making sabres, knives, and hatchets. At Sheel the ore is easily dug, being found near the surface of the ground.

September 16.—We this day marched to

* Cheer. Pinus longifolia.

Turanda, distant eight miles. After leaving camp, we passed through a beautiful forest of stately pines, many of them from twenty to twenty-seven feet in circumference. The soil, a deep black mould, was covered with rank vegetation. This species of pine called "keloo," (Deodar) is almost everlasting: it resists the attack of every kind of insect, and it is consequently much used in building. Granaries and chests for grain are invariably constructed of this wood. The keloo seldom occurs below 6000 feet, and its upper limit is nearly 12,000 feet: in a few favourable situations I have found the latter above 12,300 feet. An oil is extracted from the keloo by a similar process to that for making tar. It has an agreeable odour, and when rubbed upon the more perishable timbers, renders them less liable to decay.*

Leaving the forest we descended by a narrow rocky path amongst dark thickets of various kinds of trees; such as horse-chestnut, yew, and oak. The latter has oval leaves, which with the trunk

* Keloo, or Deodar. Cedrus Deodara.

are covered with millions of lichens streaming in the wind. We here crossed the Syldung torrent, by three rude alpine bridges. The stream is large, and flows from two sources in the Himalaya, on the southward, descending in a succession of cascades, through its course, till it joins the Sutluj about two miles below the road on the north. After crossing the Syldung we had one and a half miles of very steep ascent, which required some agility to surmount without slipping down the precipice. Rank grass from eight to ten feet high concealed the intricacies of the road, and obliged us to pick our way with caution: hence to camp, through fine woods of pine. It rained heavily all day, and the baggage did not arrive till sun-set.

Turanda is about 7100 feet above the sea. It contains 20 families, and is situated in the district of Utharabees. Across the Sutluj, opposite to this, is the Purgunna of Pundrabees, having five divisions, Kambe, Roopee, Jugooree, Kaobeel, and Keao: each comprehending a few villages. The two first only are included in Koonawur.

This Purgunna was formerly much larger, but half of it was taken by Kooloo about 60 years ago; the whole formed a Thakooraee, ruled by an independent chief, who was reduced by the Busahir government long since. The portion now belonging to Kooloo, contains ten forts, with six or eight high towers each, perched upon mountain-tops almost inaccessible.

From Kambe there is a high Pass through the Himalaya to Speetee. The road is said to be indifferent, but passable by loaded sheep. Pundrabees takes its name from being reckoned to contain fifteen-twenties or 300 Zumeendars who pay revenue. Utharabees from eighteen-twenties or 360; and it is a custom peculiar to Busahir to designate most of the Purgunnas by so many twenties or hundreds, Thus, Pundrasow 1500—Athbees 160, Panchsow 500, applied to districts, which have likewise other names. All the divisions of Koonawur have now been enumerated. The large ones are seven in number, namely, Pundrabees, Utharabees, Wangpo, Rasgramee, Shooung, Tookpa, Hungrung; the last did not

originally belong to Koonawur, and it was partly under Ludak, partly under the Chinese, but was afterwards added.

September 17.—It rained incessantly the whole day, and I felt symptoms of rheumatism again, which obliged me to halt.

September 18.—I proceeded to Sooran, a tiresome journey of 13 miles, made more fatiguing and disagreeable by continued heavy rain all the day. From Camp we descended 1½ mile over rocks and low jungle, to the Chounde a large and impetuous stream, which we crossed by a dangerous sango of two thin trees, one much lower than the other. The next five miles consisted of ascents and descents, but gaining in elevation. Two mountain-torrents were crossed, and dark forests of oak and holly were passed through. The rocks and soil drenched with the rain added danger to difficulty in the ford of a rapid stream. The person who carried me across made an awkward slip, and we were both under water in an instant: not a dry stitch of clothes were preserved: this made me proceed briskly on. Muneatee

Ghatee, which divides Koonawur from Dussow, another of the great divisions of Busahir, terminated the principal toil of climbing. There we passed an enormous mass of granite named Simdar, underneath which are two caves and a well. The rock projecting over the base affords shelter and a repose for travellers.

The country now assumed a better appearance: villages were more thick, and cultivation no longer circumscribed by the great spurs of the Himalaya spread over the sloped faces of the dell. Hence to Camp we proceeded by a miry road, crossed by thousands of rills rushing down the side of the mountains. Sooran is about 7250 feet above the sea, and forms a summer-residence of the Busahir Rajah and his court for six or seven months in the year. The climate is delicious, and is resorted to on account of the suffocating heats of Rampoor. Three miles from this, close to the Sutluj, are hot springs. Sooran is in the division of the country called Dussow, which derives its name from *Dussow*, or 1,000, being reckoned to contain that number of Zumeendars' families. It is very irre-

gularly subdivided into *Ghorees*, or principal portions, of which there are five: Nowbees, Nog, Chebees, Bureegharee, and Oochighoree. The two last are called Barabees. The Ghorees are again subdivided into smaller portions named Dugree: and besides these there are other four separate divisions, viz. Rajpoor, Buther, Panchgaon, and Bhata Neool.

Dussow was formerly ruled by an independent chief, who resided at Sooran; but when the whole country was brought under the subjection of one person, he assumed the title of Rajah, and called it Busahir or Busehur, after a *Deota* of that name. Here as well as in Pundrabees, Utharabees, and most part of Shooung, there are two crops in the year. The standard grains are wheat, barley, ogul, phapur, cheena, and kodoo.* This season has pressed severely on all descriptions of people: the first crop was parched up by long-continued drought, and half the second has been devoured by locusts.

The only remarkable building here is a grand

* Kodoo. Paspalum scorbiculatum.

temple dedicated to the goddess Bheema Kalee, who is called the Governess of Busahir. It is well built, and has two very lofty turrets with Chinese roofs; and between them a third rises still higher, crowned with a gilt ball, under which is the image. Six or seven years ago human sacrifices were offered up to Bheema Kalee; but they have been discontinued since the British conquest of the hills. The temple is attended by Brahmins; and this is the most eastern part of Busahir where any of that caste is to be found. There are none in Koonawur.

September 19, 20, and 21.—It rained incessantly during these three days; I had notwithstanding determined on moving, but the Sango across the Munglad, a rapid stream which lay on my road, had been washed away on the 18th. I took up my abode in the best house of the place during my unavoidable detention; but I might have as well been in a shower-bath. The young Rajah paid me a visit; he is an ugly boy of twelve years of age, and deformed by that glan-

dular swelling of the neck so common to the natives of this quarter of the hills.

The Rajah's attendants are all Koonawurees, who seem to be selected for their honesty and good will. There are three Wuzeers, or Ministers, in Busahir, who have separate control over certain districts. Under them are other officers who have the more immediate management of affairs. The situations of Wuzeer are generally hereditary. These officers acquire their salary by a certain percentage on the collection, a certain proportion of grain; and they have also rent-free lands. The attendants of the Rajah are of three classes: first, the Chureeas who wait immediately upon him, and guard the palace; secondly, the Hazrees who perform all sorts of work; and thirdly, the Chulneeas who carry the Rajah's palkee. These attendants are divided into sets of from eighty to one hundred each, under the authority of two or three officers. There are two sets of Chureeas, six of Hazrees, and one of Chulneeas. The Wuzeers have also attendants of

two sorts; viz. the Mislee and Andree. The former, about 200 in number, wait upon the principal Wuzeer; and the latter, of whom there are seven sets of 100 each, attend on the Wuzeers of their own districts. There is also a set of fifty Shikaroos who formerly garrisoned the forts; but since they fell to ruin they act as Hazrees. There is another set called Trade of fifty or sixty; and one of ten or twelve Rajpoots who attend on Nursing Deota of Rampoor. The whole of the attendants act as soldiers in time of war, and a certain number are furnished from each village according to its size. By far the greater part are inhabitants of Koonawur, and they are relieved every six months. The orders of the court summoned the presence of one half at a time, but since the protection of the country by the British, the attendance of them is dispensed with on paying from four to six rupees for the six months they should be at court.

At one time I had in view returning from Wangtoo by the Shatool Pass; but it is fortunate I did not attempt it, as I could never have carried

luggage across in such weather, and might have lost some of my people, as my brother James did last year about the same period. I saw a person who, on the 19th, crossed by the Jalsoo, which is 14,000 feet high: he said that the snow was then two feet deep, and the passage difficult.

September 22.—The morning was quite clear, and the snow appeared upon all the surrounding mountains, down to 10,000 feet. At sun-rise the thermometer in the open air was 43°; just the same as I had it in July at my camp above Chitkool, more than double the height. During the rainy weather the temperature almost remained stationary at 50°; but to-day it rose to 64° at half-past one P. M. About two o'clock a person arrived and reported that the Sango across the Munglad would be repaired before sun-set; and at 2h. 30m. I moved my camp and reached Mujeoulee at six o'clock, distant $4\frac{1}{2}$ miles.

From Sooran the road for two miles is still along the face of the mountain-ridge which forms the dell of the Sutluj, and sloping less precipitously to the river, is extensively cultivated. The rocks

at the commencement show an almost mural front, and being partly stripped of soil, reverberate a glow of heat during sunshine, not easily to be described to the traveller who creeps along with caution. The whole distance is $1\frac{1}{2}$ miles, and at this season of the year, where the grass is long, and after rain loaded with drops, one gets drenched to the skin; and we were also exposed to the sting of a very large nettle, which pierced the stocking. We crossed the Munglad by a crazy bridge of two spars joined together by twigs. The stream is frightfully rapid, and dashes amongst the rocks with a deafening noise. The ascent to camp was equally as steep as the descent, and part of it comprehended a bed of decomposed mica, which, being soaked by the rain, had a saponaceous softness which made us slip at every step. Mujeoulee is situated in the Dugree of the same name belonging to Noubees; it contains twenty families, and is 5850 feet above the sea, and 1100 higher than the Munglad; there is a Deota here named Luchmee Narain, where there are several stone images.

September 23.—Proceeded to Rampoor, the capital of Busahir, distant 13½ miles. The road for 5½ miles is on a plain, richly cultivated in a gradation of terraces, watered by numberless small streams which overflow the path. At this point of the road is Goura, a residence of the Rajah's, and his place of rest and refreshment when he ascends to Sooran; this is a neat and respectable building, with a handsome Thakoor Dwara, surrounded by an open veranda, beautifully ornamented with carved wooden flowers.

Hence we descended gently for one mile to a rill with sharp and frail banks which give way by the rains, and overwhelm the travellers who are so unfortunate as to pass at the time. In the present instance this road was blocked up by a fresh slip, and we made a circuit for our safety: hence for two miles the road ascended and descended, sometimes leading through woods, at others, on grass and green sward diversified with flowers of many tints. Another remarkably steep declivity of 1½ mile brought us to the edge of the Sutluj, along which we proceeded briskly

for four miles to camp, rejoiced to exercise our limbs once more upon a level of even this short extent. As you approach the capital, the country assumes a more dreary appearance, the trees no longer find their native climate, and vanish; the grass itself becomes parched and brown; cultivation is reduced to a few spots, and also ceases with the rest.

Rampoor is in the Nog of Dussow, and rests upon the left bank of the Sutluj at the distance of a stone-cast. Its latitude is 31° 27′ and longitude 77° 38′; it is elevated above the sea 3300 feet, and contains 110 families permanently resident; nearly half of whom are occupied in trade. Some of the houses are pretty well built of stone, commonly two stories high, and slated. The slates are of a blueish colour and very thick. All the Wuzeers have houses in the capital, and the Rajah's palace at the N. E. corner of the town is a collection of buildings, some of which are three and four stories high, and roofed with very large oblong slates. Wooden balconies are attached to them, which are neatly carved with flowers and

fringes, and the roofs are in the Chinese style. This sort of roof has a peculiarly agreeable appearance, and is in common use where slates are to be had. The form is a curve, the concave side is outwards. The two uppermost rows of slates make a very acute angle, and the slope becomes gradually less to the lowest, which is almost horizontal, and projects three or four feet beyond the building. The Dewan Khana, where I stopped, has the remains of grandeur. It is a long room, with two doors at each end; the side towards the river is open, the roof being supported on posts, with arched windows. The other is shut up and painted with a variety of figures and flowers, of gaudy colours, on fine stucco. It is well slated, and surrounded by a fringe of turned cylindrical pieces of wood; most of the paintings were defaced by the Goorkhas, and the whole is fast going to decay.

Rampoor is said to have been formerly larger; but it could never have extended much beyond its present boundaries. On one hand rolls the Sutluj, and on the other the mountains rise up to a great height; the included space not exceeding a gun

shot. This spot is hot and unhealthy; the contiguous hills are of bare rock, and being once heated by the sun, they retain their warmth for months, which added to the reflection from the slated roofs, and detached masses of stone, renders the climate in summer insupportable. There is no circulation of air, and the nights are close, and scarcely cooler than the days. In winter again the temperature is proportionably cold and damp, and the thermometer is frequently lower than at Kotgurh, which is 3500 feet more elevated. The sun at this season being only visible during five hours in the day.

Wood is very scarce, and consequently dear: it is felled in the forests high up the stream of the Nouguree, and is floated down to its junction with the Sutluj, where there are several natural caves in the rocks inhabited by woodsellers, who cut up the trees and carry them to Rampoor, a distance of four miles. There are three chief temples here, viz. Shaleegram, Seeta Ram, and Nursing. They were formerly very rich, and contained much gold and silver, which was taken to Koonawur on the

Goorkha invasion, and turned into money for the support of the Rajah and the Ranees.

The inhabitants weave blankets of Beangee and Koonawur wool, and likewise a few Pushmeenas or coarse shawls. At Rampoor there is a jhoola or rope bridge across the Sutluj, leading to Kooloo, the capital of which is Sirthanpoor, situated on the right bank of the Beah or Hyphasis, two days' journey from its source. Kooloo is a Rajship extending on both banks of the river and containing upwards of forty forts. It is divided into eight Wuzeeries, viz. Siraj, Roopee, Purour, Bughahul, Oorlee Lug, Purlee Lug, Chooaree, and Lahoul. These are divided into Purgunnas, each commonly taking its name from the principal fort. These are again subdivided into Biletees, of which there are from three to five to every Purgunna. The country is not so rugged as Busahir, and it is more productive, a great part of the cultivation being rice.

There is a horse-road from Bilaspoor to the capital, and thence by Rolung Pass to Ludak. This Pass is not very high, although it crosses

the Himalaya to Lahoul, a secluded region lying on the banks of the Chinab, called in this quarter Chunder Bhaga. Lahoul, properly speaking, is a Thakooraee, but is now reckoned amongst the Wuzeeries, the Ranee who was the ruler being stripped of almost all her authority. This country is arid and elevated; the mountains are barren and sloped, producing only short grass and furze, and the soil is gravelly. The inhabitants are Tartars; but the language spoken there, as far as I can judge from a list of thirty words, is almost the same as in the lower parts of Koonawur, with some difference in the dialect.

There is borax in Lahoul; but the chief riches of the people consist of large flocks of sheep and goats, which furnish them with fine soft wool; and herds of yaks and ghoonts of a superior breed. The people are very expert in the use of the sling and stone, with which they sometimes kill hares and musk-deer, both animals being plentiful.

Sirthanpoor, the capital, is frequently called Rugnatpoor, after the temple of Rugnat, which is the principal one in Kooloo. By all accounts this

temple was amazingly rich, but it was plundered of everything by the Sikhs some years ago. There are many other sacred places in Kooloo: Muneekurn and its boiling springs have already been noticed. There are also hot wells at Kulat and Bushisht Rikhee.

At Rampoor the Sutluj is 211 feet broad, and in the cold season it is crossed by means of inflated skins, which is both a safe and expeditious conveyance. Directly opposite Rampoor, and across the Sutluj, are seen three forts of Kooloo perched on the summit of a lofty range: they are crowned with high towers and battlements, which give them an imposing appearance, seeming to defy approach. There are three melas or fairs yearly at Rampoor, which are attended by people from Mundee, Sooked, Kooloo, Koonawur, and the Plains. One takes place about the 10th of May, another on the 12th of October, and the third, called the Dhalmela, about Christmas. At the last, a person from each Zumeendar's house in Koonawur must be present, and the whole armed: whence the name of Dhal. A few carry matchlocks, some

shields and swords, and by far the greatest number of them hatchets or battle-axes. They march through the town of Rampoor, and are mustered before the palace, where they fire a volley at the word of command; but it occupies a full minute.

September 24.—Marched to Kotgurh, a distance of twenty-one miles, rather a long day's journey, but as it was to bring me to a British post and the repose which I stood so much in need of, I made an unusual exertion. For two-thirds of the way there is little ascent or descent, but the road is very irregular and narrow, and slants to the Sutluj, often from the edge of a precipice. Four miles from Rampoor we crossed the Nouguree, a large stream coming from the eastward and uniting with the Sutluj, a few yards below the road. The wooden bridge is one of the best of the kind I have met with, but being high above the stream, which darts forth with great velocity, it is not traversed without uneasiness to inexperienced passengers; hence $4\frac{3}{4}$ miles by a similar sort of road to Dutnugur. Hitherto the dell of the Sutluj is very narrow, the mountains forming

it rising abruptly, so that the road is made with difficulty and some danger, and it is in no part a stone-cast from the river, neither villages nor cultivation occurring till near Dutnugur, where the dell expands and forms a flat of two miles in length, well watered by canals, and bearing luxuriant crops of rice. Dutnugur is a large village named after a Deota who resides in it. There are fifty families, half of them Brahmins, who have rent-free lands. It belongs to Kunchen, a small district of Busahir, formerly under a Chieftain who lived in the Fort of Sangree, now dismantled. Nearly opposite to this across the Sutluj, upon the bank of a considerable stream, which formed the ancient boundary of Busahir, is the large town of Neermund, containing 400 families Brahmins, and a famous temple named Umbka, for whose and the Brahmins' support a great many rent-free lands are assigned. Three and a half miles further, by a level road on the edge of the Sutluj, I crossed the Muchad stream by a sango, which brought me to Nirtnugur, where I halted three hours. This is a small rent-free

Brahmins' village, close by the Sutluj, in the Thakooraee of Delut, which is under a chief who pays tribute to Busahir. Here, as well as at Dutnugur, there is sometimes a mela or fair, where a person slides down a rope. At this place the rope is suspended above the Sutluj, the banks being of so very unequal a level as to produce a necessary inclination; and the last time this occurred (many years ago) the rope broke in stretching, which is considered a very unlucky omen, and the Brahmins are regarded as out-casts until the ceremony is successfully performed.

This is a feat of agility which is frequent hereabouts, and I shall add an account of one which happened last year (1820) at the village of Dulas in Kooloo, which I visited. It is proper to premise that there are eighteen Deotas in this vicinity, where the ceremony takes place, ten in Kooloo, two in Sooked a neighbouring rajship, and six in Busahir. The most revered of these is Umbka in Neermund, the large town before mentioned.

Here it occurs every twelfth year, in the middle

of August of the same year in which the grand Hurdwar Fair takes place. At the other temples it is less common, being once in twenty or thirty years. The whole of the eighteen Deotas assemble, when the man slides down the rope, and before the grand mela which is called Bhoonda, there is a ceremony named Hoom, which is as follows: Two pits of masonry about twelve feet deep are opened; one is filled with water for the ablutions of the Brahmins, and in the other a constant fire is kept up, into which a certain proportion of dates, sugar, rice, raisins, newsas, ghee, oil, and sandal-wood, is daily thrown for a certain period; the duration of the Hoom varies according to the grandeur and revenue of the Deota. At Neermund it is said to be two and a half years, and at Dulas six months. It concludes immediately before the mela begins, and the pits are then shut up by boards, the most superstitious people believing that the fire continues burning until the next Bhoonda.

A considerable expense is incurred at the fairs, besides what is required for the Hoom, as most of

the people who assemble to see it are fed during the time it lasts, which is usually three days. The most respectable persons get a sheep or goat, some salt, rice, and ghee, and the poorer class are supplied with grain. At Neermund the concourse of people is from 12,000 to 15,000, and at the other Deotas from 5000 to 6000. As soon as one Bhoonda is concluded, they begin to collect grain for the next, consequently little of it is eatable.

I and a friend were at Kotgurh in August, and asked permission to visit Neermund, which was not granted; but the Wuzeer said he would be happy to see us at Dulas, and we accordingly proceeded, crossing the Sutluj by a rope bridge. We reached the village on the 23rd of August, and on the 24th most of the Deotas arrived, only one or two of them in person however, the others being represented by clothes, pots, plates or books, which were sent instead of the image, and each was carried on the head of a Brahmin and encircled by silk cloths and shawls, and around them were people waving chouries and fans of peacocks' feathers.

They were preceded by dancing girls and the music of drums, trumpets, cymbals and pipes; some of the Deotas had neatly-painted large chattas (umbrellas) which were kept twirling round, whilst others were accompanied by red triangular cloth flags. The Neermund Deota had a very large silver trumpet, and was attended by many people, including the Wuzeer, who carried silver maces. All the Deotas and their utensils, &c., were placed close to each other in a small space cleared of grass, where there was a fire burning, and at 5 P. M. they were taken to a temple in a village.

August 25.—Nothing particular occurred, but men and women were singing, dancing, and playing upon many kinds of musical instruments.

August 26.—This was the grand day, and crowds of people began to assemble at an early hour, to secure a favourable spot for viewing the ceremony. There were about 4000 spectators, including men, women, and children, all of them clothed in their best attire. Many of the men wore silk clothes, and the usual head-dress, which is a cap of black blanket with a red crown. The

women were covered with ornaments from head to foot, such as beads, cowrie-shells and necklaces. Many wore shawls, and striped silk tartan, and a few had even massy gold ear-rings and bracelets. At 9 A. M. the rope, which was upwards of 1800 feet long, was brought to the place by a great many people who formed a long line, each carrying a large coil over his shoulder. The rope was threefold, and three inches in diameter. It was made of a fine kind of grass called *moonja* (the same is used for the bridges) by the person who slides down it, which occupies him a year to finish: six months are spent in collecting the grass, and six in plaiting it.

The rope was fastened to two posts, one on the side of an abrupt mountain, and the other a considerable distance from its base: little more than half of it was used, the distance between the points of suspension being 654 feet measured. It was pulled as tight as possible; but in such a space you may easily suppose it was very much curved. The elevation of the upper post from the lower one was $22\frac{1}{2}^{\circ}$, but the first part of the declivity

was 35¼, gradually lessening, and the hundred feet nearest the ground was almost parallel with the horizon. The last stretch given to the rope was by raising the lower end some distance from the post, by cross sticks to about twenty feet from the ground. At noon, the lad who was to slide down, was borne upon men's shoulders from the village to the upper post. He waved a white cloth round his head all the time they carried him.

He was then placed in a seat formed out of half a hollow fir-tree, with a support for his back, and sand-bags of 20lbs. tied to each of his feet; he was upon the whole so well secured as to be in little risk of falling if the rope did not break, which I believe very seldom happens. During the time of adjusting the sand-bags the seat was tied with a string to the upper post, and at three P. M., when all was ready, on a signal given by the Brahmins, a couple of matchlocks were fired, and two goats slain by striking off their heads at a single blow of a hatchet; the seat was let loose by cutting the string, and the man descended at first with extreme velocity, gradually abating till

he stopt within 120 feet of the lowest post. During the descent he continued waving the cloth round his head. When he halted the rope was lowered, and he was taken off and conducted to the village amidst the shouts and cheers of a crowd of spectators. He was handsomely remunerated for the performance; he received eighty-four rupees, together with gold ear-rings and silver bracelets, from the Brahmins of the temple; a rich dress and some money from the Wuzeer; ten rupees from each of us, and from one to three rupees from several of the chief people, beside some annas from many of the poorer sort. Had the rope broken he would, in all probability, have been killed on the spot; but should he survive, he is not put to death, as is the custom in Gurhwal, mentioned by Captain Raper. After the ceremony the rope is coiled round the temple.

During our stay at Dulas, which was four days, we and our people were supplied with provisions; but excepting two sheep and a little salt and rice expressly for ourselves, the grain and ghee which our servants got was not eatable, being about 20 years old. The Wuzeer was much taken with the

sight of a good spy-glass, and some other things, all of which we gave him, so that we paid for our curiosity.

I will now continue and conclude my narrative. I left Nirtnugur at half-past 3 P. M. For two miles the road was by the edge of the Sutluj, but very rocky and hard for the feet, to the Bearee, a stream which separates Delut from Sindoch, a detached Purgunna formerly belonging to Kotgooroo, but now under the British Government. We forded the Bearee with much difficulty, the water was $2\frac{1}{2}$ feet deep, and we could only stem the torrent by eight or ten of us joining hands. We now finally emerged from the glen of the Sutluj, by a very fatiguing ascent of 4000 feet of perpendicular height; three miles further by a winding road, as it grew dark, brought me to Kotgurh. Some of the baggage arrived with me, and the rest came up by noon next day. All the instruments are safe, and the spiders' webs of the Transit in perfect order, not having once required to be renewed.

Kotgurh, Sept. 29, 1821.

END.

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